Battery Tender Deltran Europe Lithium Iron
LiFePO4
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SDS No: 12503-0001

SECTION 1: Identification

1.1. Identification

Product form : Article
Product name : Battery Tender Deltran Europe Lithium Iron LiFePO4
Other means of identification : BTL09A120C 25.6Wh
BTL14A240C 51.2Wh
BTL18A300C 64Wh
BTL24A360C 76.8Wh
BTL35A480C 96Wh

1.2. Recommended use and restrictions on use

Use of the substance/mixture : batteries and accumulators
Recommended use : batteries and accumulators

1.3. Supplier

Deltran Europe Limited
2 Low Road Congham
Kings's Lynn
Norfolk PE32 1AE, - United Kingdom
T (+44) 01485 600892

E-mail address of competent person responsible for the SDS: sds@gbk-ingelheim.de

1.4. Emergency telephone number

Emergency number : Telephone Number (USA) 1-800-424-9300
International Number +1 (703) 527-3887

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Acute toxicity (dermal) H312 Harmful in contact with skin
Category 4
Skin corrosion/irritation H314 Causes severe skin burns and eye damage
Category 1A
Skin sensitization, Category 1 H317 May cause an allergic skin reaction
Carcinogenicity Category 2 H351 Suspected of causing cancer
Specific target organ toxicity (repeated exposure) Category 1 H372 Causes damage to organs through prolonged or repeated exposure

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling
Hazard pictograms (GHS-US) :

Signal word (GHS-US) : Danger
Hazard statements (GHS-US) : H312 - Harmful in contact with skin
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H351 - Suspected of causing cancer
H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary statements (GHS-US) : P201 - Obtain special instructions before use.
### 2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification: In case of electrolyte leakage: According to concentration, aqueous solution causes irritations or burns of eyes, skin and mucous membranes. In case of cell damage, possible release of dangerous substances and a flammable gas mixture.

### 2.4. Unknown acute toxicity (GHS US)

Not applicable

### SECTION 3: Composition/Information on ingredients

#### 3.1. Substances

Not applicable

#### 3.2. Mixtures

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phosphate(1-), hexafluoro-lithium(1:1)</td>
<td>(CAS-No.) 21324-40-3</td>
<td>1 - 10</td>
<td>Acute Tox. 3 (Oral), H301 Skin Corr. 1A, H314 STOT RE 1, H372</td>
</tr>
<tr>
<td>Ethylene carbonate</td>
<td>(CAS-No.) 96-49-1</td>
<td>1 - 10</td>
<td>Acute Tox. 4 (Oral), H302 Eye Irrit. 2A, H319 STOT RE 2, H373</td>
</tr>
<tr>
<td>nickel powder, [particle diameter &lt; 1 mm]</td>
<td>(CAS-No.) 7440-02-0</td>
<td>1 - 10</td>
<td>Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372 Aquatic Chronic 3, H412</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements: see section 16

### SECTION 4: First-aid measures

#### 4.1. Description of first aid measures

**First-aid measures general**: The following first aid measures are required only in case of exposure to interior battery components after damage of the external battery casing. Undamaged, closed cells do not represent a danger to the health.

**First-aid measures after inhalation**: Ensure of fresh air. If symptoms persist, call a physician. Do not apply mouth-to-mouth resuscitation. Administer oxygen if breathing is difficult. Delayed fatal pulmonary edema possible.

**First-aid measures after skin contact**: Immediately rinse with plenty of water (for at least 15 minutes). Get medical advice if skin irritation persists.

**First-aid measures after eye contact**: Wash immediately with plenty of water (during 20 minutes), also under eyelids. Remove contact lenses, if present and easy to do. Continue rinsing. Consult an eye specialist.

**First-aid measures after ingestion**: Do not induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician immediately.

#### 4.2. Most important symptoms and effects (acute and delayed)

**Symptoms/effects**: In case of electrolyte leakage: According to concentration, aqueous solution causes irritations or burns of eyes, skin and mucous membranes.

#### 4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

### SECTION 5: Fire-fighting measures

#### 5.1. Suitable (and unsuitable) extinguishing media

**Suitable extinguishing media**: Fire-extinguishing activities according to surrounding.

**Unsuitable extinguishing media**: Water.

#### 5.2. Specific hazards arising from the chemical

**Reactivity**: The product is non-reactive under normal conditions of use, storage and transport.
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SECTION 3: Chemical identification

3.1. Identification of substance/mixture and of its components

3.1.1. Chemical substance(s)

nickel powder, [particle diameter < 1 mm] (7440-02-0)

3.1.2. Chemical mixture

nickel powder, [particle diameter < 1 mm] (7440-02-0)

3.2. Hazard Identification

3.2.1. GHS Classification

nickel powder, [particle diameter < 1 mm] (7440-02-0)

section 4: First-aid measures

4.1. First-aid measures

4.1.1. Spillage or leak procedures

section 5: Fire-fighting measure

5.1. Extinguishing media

5.1.1. Suitable extinguishing media

5.1.2. Incompatible extinguishing media

section 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

6.1.2. For emergency responders

6.2. Environmental precautions

6.3. Methods and material for containment and cleaning up

6.4. Reference to other sections

For further information refer to section 8: “Exposure controls/personal protection”. For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

7.1.1. Additional hazards when processed

7.1.2. Precautions for safe handling

7.1.3. Hygiene measures

7.2. Conditions for safe storage, including any incompatibilities

7.2.1. Storage conditions

7.2.2. Incompatible products

7.2.3. Incompatible materials

7.2.4. Storage temperature

7.2.5. Heat-ignition

7.2.6. Information on mixed storage

7.2.7. Storage area

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th></th>
<th>ACGIH</th>
<th>ACGIH TWA (mg/m³)</th>
<th>1.5 mg/m³ (inhalable particulate matter)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA</td>
<td>OSHA PEL (TWA) (mg/m³)</td>
<td>1 mg/m³</td>
</tr>
<tr>
<td></td>
<td>IDLH</td>
<td>US IDLH (mg/m³)</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td></td>
<td>NIOSH</td>
<td>NIOSH REL (TWA) (mg/m³)</td>
<td>0.015 mg/m³</td>
</tr>
</tbody>
</table>
Ethylene carbonate (96-49-1)  
Not applicable

Phosphate(1-),hexafluoro-,lithium(1:1) (21324-40-3)  
Not applicable

Additional information : During normal charging and discharging there is no release of product.

8.2. Appropriate engineering controls
Appropriate engineering controls : In case of electrolyte leakage: Ensure adequate ventilation, especially in confined areas.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:
In case of electrolyte leakage: Wear recommended personal protective equipment.

Hand protection:
In case of electrolyte leakage: Chemically resistant protective gloves

Eye protection:
In case of electrolyte leakage: Tightly fitting goggles (EN 166)

Skin and body protection:
In case of electrolyte leakage: Acid-resistant clothing

Respiratory protection:
In case of electrolyte leakage: Put on breathing apparatus

Other information:
In case of electrolyte leakage: Avoid contact with skin, eyes and clothing. Do not breathe gas/fumes. Eliminate ignition sources.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
</tr>
<tr>
<td>Color</td>
<td>Blue, Black, Green</td>
</tr>
<tr>
<td>Odor</td>
<td>odorless</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Solubility</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>
Explosive properties : No data available
Oxidizing properties : No data available

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions
No dangerous reactions known under normal conditions of use. No polymerization. Electrolyte and electrodes may react with water or moisture.

10.4. Conditions to avoid
Keep away from any flames or sparking source. Do not puncture, crush or incinerate. Air contact. Moisture.

10.5. Incompatible materials

10.6. Hazardous decomposition products
Carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Dermal: Harmful in contact with skin.

Battery Tender Deltran Europe Lithium Iron LiFePO4
ATE US (dermal) 1100 mg/kg body weight
nickel powder, [particle diameter < 1 mm] (7440-02-0)
LD50 oral rat > 9000 mg/kg

Ethylene carbonate (96-49-1)
ATE US (oral) 500 mg/kg body weight

Phosphate (1-),hexafluoro-lithium(1:1) (21324-40-3)
ATE US (oral) 100 mg/kg body weight
Skin corrosion/irritation: Causes severe skin burns and eye damage.
Serious eye damage/irritation: Not classified
Respiratory or skin sensitization: May cause an allergic skin reaction.
Germ cell mutagenicity: Not classified
Carcinogenicity: Suspected of causing cancer.

nickel powder, [particle diameter < 1 mm] (7440-02-0)
IARC group 2B - Possibly carcinogenic to humans
National Toxicology Program (NTP) Status Reasonably anticipated to be Human Carcinogen
In OSHA Hazard Communication Carcinogen list Yes

Reproductive toxicity : Not classified
Specific target organ toxicity – single exposure : Not classified
Specific target organ toxicity – repeated exposure : Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard : Not classified
Symptoms/effects : In case of electrolyte leakage: According to concentration, aqueous solution causes irritations or burns of eyes, skin and mucous membranes.
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SECTION 12: Ecological information

12.1. Toxicity
Ecology - general : When used and handled according to specifications, the product does not have any harmful effects according to our experience and the information provided to us.

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available

12.5. Other adverse effects
No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods
Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

Department of Transportation (DOT)
In accordance with DOT

Transport document description : UN3480 Lithium ion batteries including lithium ion polymer batteries, 9
UN-No.(DOT) : UN3480
Proper Shipping Name (DOT) : Lithium ion batteries including lithium ion polymer batteries
Class (DOT) : 9 - Class 9 - Miscellaneous hazardous material 49 CFR 173.140
Hazard labels (DOT) : 9 - Class 9 (Miscellaneous dangerous materials)

DOT Special Provisions (49 CFR 172.102) : A51 - When transported by cargo-only aircraft, an oxygen generator must conform to the provisions of an approval issued under Special Provision 60 and be contained in a packaging prepared and originally offered for transportation by the approval holder. A54 - Lithium batteries or lithium batteries contained or packed with equipment that exceed the maximum gross weight allowed by Column (9B) of the 172.101 Table may only be transported on cargo aircraft if approved by the Associate Administrator.

DOT Packaging Non Bulk (49 CFR 173.xxx) : 185
DOT Packaging Bulk (49 CFR 173.xxx) : 185

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 5 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 35 kg

DOT Vessel Stowage Location : A - The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel.

Emergency Response Guide (ERG) Number : 147
Other information : No supplementary information available.
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Transportation of Dangerous Goods
Not applicable

Transport by sea
Transport document description (IMDG) : UN 3480 LITHIUM ION BATTERIES, 9
UN-No. (IMDG) : 3480
Proper Shipping Name (IMDG) : LITHIUM ION BATTERIES
Class (IMDG) : 9 - Miscellaneous dangerous substances and articles
MFAG-No 147

Air transport
Transport document description (IATA) : UN 3480 Lithium ion batteries, 9
UN-No. (IATA) : 3480
Proper Shipping Name (IATA) : Lithium ion batteries
Class (IATA) : 9 - Miscellaneous Dangerous Goods

SECTION 15: Regulatory information

15.1. US Federal regulations
Battery Tender Deltran Europe Lithium Iron LiFePO4
Listed on the United States TSCA (Toxic Substances Control Act) inventory

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

nickel powder, [particle diameter < 1 mm] CAS-No. 7440-02-0 1 - 10%

nickel powder, [particle diameter < 1 mm] (7440-02-0)
CERCLA RQ 100 lb
Phosphate(1-),hexafluoro-lithium(1:1) (21324-40-3)

EPA TSCA Regulatory Flag P - P - indicates a commenced PMN substance.

15.2. International regulations

CANADA
Battery Tender Deltran Europe Lithium Iron LiFePO4
Listed on the Canadian DSL (Domestic Substances List)
Listed on the Canadian NDSL (Non-Domestic Substances List)

nickel powder, [particle diameter < 1 mm] (7440-02-0)
Listed on the Canadian DSL (Domestic Substances List)

Ethylene carbonate (96-49-1)
Listed on the Canadian DSL (Domestic Substances List)

Phosphate(1-),hexafluoro-lithium(1:1) (21324-40-3)
Listed on the Canadian NDSL (Non-Domestic Substances List)

EU-Regulations
nickel powder, [particle diameter < 1 mm] (7440-02-0)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations
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nickel powder, [particle diameter < 1 mm] (7440-02-0)

| Listed on the AICS (Australian Inventory of Chemical Substances) |
| Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) |
| Listed on the Korean ECL (Existing Chemicals List) |
| Listed on NZIoC (New Zealand Inventory of Chemicals) |
| Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) |
| Listed on INSO (Mexican national Inventory of Chemical Substances) |
| Listed on Turkish inventory of chemical |

15.3. US State regulations

This product can expose you to nickel powder, [particle diameter < 1 mm], which is known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

nickel powder, [particle diameter < 1 mm] (7440-02-0)

<table>
<thead>
<tr>
<th>U.S. - California - Proposition 65 - Carcinogens List</th>
<th>U.S. - California - Proposition 65 - Developmental Toxicity</th>
<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</th>
<th>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</th>
<th>No significant risk level (NSRL)</th>
<th>Maximum allowable dose level (MADL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

nickel powder, [particle diameter < 1 mm] (7440-02-0)

| U.S. - Massachusetts - Right To Know List |
| U.S. - New Jersey - Right to Know Hazardous Substance List |
| U.S. - California - Safer Consumer Products - Initial List of Candidate Chemicals and Chemical Groups |
| U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List |
| U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances |
| U.S. - Alaska - Water Quality Standards - Acute Aquatic Life Criteria for Fresh Water |
| U.S. - Alaska - Water Quality Standards - Chronic Aquatic Life Criteria for Fresh Water |
| U.S. - Alaska - Water Quality Standards - Acute Aquatic Life Criteria for Marine Water |
| U.S. - Alaska - Surface Water Quality Standards - Chronic Aquatic Life Criteria |
| U.S. - Alaska - Surface Water Quality Standards - Acute Aquatic Life Criteria |

Ethylene carbonate (96-49-1)

| U.S. - Pennsylvania - RTK (Right to Know) List |

SECTION 16: Other information

Full text of H-phrases:

| H301 | Toxic if swallowed |
| H302 | Harmful if swallowed |
| H312 | Harmful in contact with skin |
| H314 | Causes severe skin burns and eye damage |
| H317 | May cause an allergic skin reaction |
| H319 | Causes serious eye irritation |
| H351 | Suspected of causing cancer |
| H372 | Causes damage to organs through prolonged or repeated exposure |
| H373 | May cause damage to organs through prolonged or repeated exposure |
| H412 | Harmful to aquatic life with long lasting effects |
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<table>
<thead>
<tr>
<th>NFPA health hazard</th>
<th>1 - Materials that, under emergency conditions, can cause significant irritation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFPA fire hazard</td>
<td>0 - Materials that will not burn under typical dire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.</td>
</tr>
<tr>
<td>NFPA reactivity</td>
<td>0 - Material that in themselves are normally stable, even under fire conditions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazard Rating</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>4 Severe Hazard - Life-threatening, major or permanent damage may result from single or repeated overexposures</td>
</tr>
<tr>
<td>Flammability</td>
<td>0 Minimal Hazard - Materials that will not burn</td>
</tr>
<tr>
<td>Physical</td>
<td>1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.</td>
</tr>
</tbody>
</table>

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.