



Section 1. Product and Company Identification.

1.1 Model Number; LSTART235.11 v1
1.2 Description; Lithium-ion battery pack for LSTART235
Battery: 12 Volt. 2.6 Ah. 243 grams.

1.3 Manufacturer;

Sealey Group.
Kempson Way,
Bury St. Edmunds,
Suffolk.
IP32 7AR

1.4 Emergency telephone number; 44 (0) 1284 757 500 (Office Hours)

Date of source compilation; 8 April 2013

Section 2. Hazards Identification.

Invasion routes; eyes, skin contact, ingestion.

Health Hazard; Harmful if swallowed. Safe under normal conditions of use. Contents are non-reactive when the battery integrity and seals remain intact. DO NOT OPEN or DISMANTLE. DO NOT EXPOSE TO FIRE or NAKED FLAME. Burn / Explosion / Fire risks; do not mix with varying chemistries, sizes & types of battery. Do not crush or incinerate.

Environmental hazard; the internal electrolyte may cause adverse environmental impact.

Danger of fire and explosion; risk is increased by high temperature and short circuit.



Section 3. Substances.

3.1 Chemical Name (substance)	3.1 CAS No.	3.2 Concentration Weight	Classification	
			Hazard Class & Category Code	Hazard Statements
Lithium Cobalt Oxide	12190-79-3	15-40%	Skin Sens. 1 Carc. 1B Acute Tox. 4	H317 H350 H302
Graphite	7782-42-5	7-25%	Eye Irrit. 2 STOT SE 3 STOT RE 1	H319 H335 H372
Hexfluoropropylene-vinylidene	9011-17-0	3-15%	Aquatic Chronic 2	H411
Diethyl Carbonate	105-58-8	0-15%	Flam. Liq. 3 Skin Irrit. 2 Eye Irrit. 2 STOT SE 3	H226 H315 H319 H335
Dimethyl Carbonate	616-38-6	0-15%	Flam. Liq. 2	H225
Ethyl Methyl Carbonate	623-53-0	0-15%	Flam. Liq. 3 Skin Irrit. 2 Eye Irrit. 2 STOT SE 3	H226 H315 H319 H335
Propylene Carbonate	108-32-7	0-15%	Eye Irrit. 2 Skin Irrit. 2 Xi; R36	H319 H315
Ethylene Carbonate	96-49-1	0-15%	Acute Tox. 4 Eye Irrit. 2 STOT RE 2	H302 H319 H373
Lithium Hexafluorophosphate	21324-40-3	0-5%	Met. Corr. 1 Acute Tox. 4 Acute Tox. 3 Skin Corr. 1B Eye Dam. 1	H290 H302 H311 H314 H318
Acetylene Black	1333-86-4	0-2%	Flam. Sol. 2 Eye Irrit. 2 STOT SE 3 Carc. 2	H228 H319 H335 H351

For full text of Phrases and Statements, see Section 16.



Section 4. First Aid Measures.

Lithium Batteries do not pose a risk to eyes or skin under normal circumstances.
In the case of contact with internal substances;

4.1 Description of first aid measures

Inhalation

If breathing difficulties develop, remove the person to fresh air.
Loosen close fitting clothing.
Ensure that person is warm.

If mouth to mouth resuscitation is necessary, the person conducting this must take steps to reduce the risk of contamination from toxic / corrosive substances that may be present.

Skin Contact

Remove contaminated clothing.
Flush affected area(s) with copious amounts of water for at least 15 minutes.
Get medical attention.

Eye Contact

Irrigate eyes with water for at least 15 minutes while raising eyelid(s).
Get medical attention.

Ingestion

If swallowed, do not induce vomiting. Give large amounts of water but *do not* do this if casualty is unconscious.

Protection of First Aiders:

- Use personal protective equipment.
- Avoid contact with skin, eyes and clothing.

4.2. Most important symptoms and effects, both acute and delayed

No information available.

4.3. Indication of any immediate medical attention and special treatment needed

No information available.



Section 5. Fire Fighting Measures.

Recommended practice;

Always ensure that Personal Protection Equipment (PPE) is used.

If a battery becomes hot, immediately remove it from flammable materials and place on a non-combustible surface.

If possible, place a disintegrating device outdoors and allow it to burn out.

Fire condition; NB; ensure that electrical devices are turned off. Prevent electric shock risk.

If any batteries are burning, water may not extinguish them, but will cool the adjacent batteries and control the spread of fire.

5.1. Extinguishing media

Extinguishers;

Only use Graphite based CO₂ (Carbon dioxide), Dry Powder or Foam.

Copper powder fire extinguishers, sand, dry ground dolomite or soda ash may also be used. These materials act as smothering agents.

If possible, use a **LITH-X (powdered graphite)** extinguisher on small fires. This material acts as a smothering agent. *A sodium chloride powder extinguisher IS NOT suitable for use on Lithium Batteries.*

It may not be possible to extinguish burning lithium batteries. Burning batteries will burn themselves out.

Do not use water with **LITH-X (powdered graphite)**.

- If a LITH-X (powdered graphite) extinguisher is not available;

Use copious amounts of water in a fine spray to swamp a fire.

Continue to use copious amounts of water until the fire is extinguished and the batteries are cooled.

NB: Lithium reacts with water to form Hydrogen. The fire will not be extinguished immediately.

Be aware of the increased risk of explosion.

NB; fire-fighting water runoff may be corrosive / toxic and may cause adverse environmental impact.

5.2. Special hazards arising from the substance or mixture

Hazard characteristics; thermal decomposition can lead to the release of toxic fumes.

Hazardous combustion products; carbon dioxide, carbon monoxide, lithium oxide fumes.

5.3. Advice for fire-fighters

Fragments may be ejected from a fire.

Fire Fighters should wear self-contained breathing apparatus and appropriate Personal Protective Equipment.



Section 6. Accidental Release Measures.

6.1. Personal precautions, protective equipment and emergency procedures

In the event of battery rupture and leakage,

- Ventilate the area.
- Wear appropriate protective clothing (see Section 7) to prevent eye and skin contact and to prevent inhalation of vapours or fumes.
- Remove sources of ignition.

6.2. Environmental precautions

No information available.

6.3. Methods and material for containment and cleaning up

Absorb released materials with inert absorbent (dry sand or soil).

Collect released materials into sealed plastic bag or container.

Prevent material from contaminating soil or entering sewers or waterways.

Do not dispose of released materials with domestic waste

Do not allow product to enter ground water, water course or sewerage system.

Dispose of released materials in accordance with local authority regulations.

6.4. Reference to other sections

See Section 7 for information on Safe Handling

See Section 8 for information of Personal Protective Equipment.

See Section 13 for information on disposal.

Section 7. Handling and Storage.

7.1. Precautions for safe handling

Never dismantle or modify a battery.

Do not short circuit a battery. A short circuit causes heating and can lead to ignition of surrounding materials.

Physical contact with a short-circuited battery can cause skin burn.

7.2. Conditions for safe storage, including any incompatibilities

Always store batteries in an appropriate container to prevent contact with conductive materials.

Do not allow contact with water.

Store in original container. Keep container tightly closed.

Store in a dry, cool place.

Store at 20 °C (68°F); room temperature

Store away from ignition sources, heat, and incompatible materials.

7.3. Specific end use(s)

Intended for use as the battery for the Model Number identified in 1.1 with Description stated in 1.2



Section 8. Exposure Controls/Personal Protection.

8.1. Control parameters

In the event of battery rupture and leakage:

Ventilate the area.

Remove sources of ignition.

8.2. Exposure controls

The use of Personal Protective Equipment (PPE) is not necessary under conditions of normal use.

If handling a leaking or ruptured battery, ensure that the following Personal Protective Equipment (PPE) is used.

Eye/Face Protection

Chemical grade full face shield

Skin Protection

Acid resistant, natural rubber or neoprene gloves.

Protective rubber apron

Appropriate Personal Protection with long sleeves and long trousers.

Respiratory Protection

Acid gas filter mask or self-contained breathing apparatus.

Section 9. Physical and Chemical Properties.

9.1. Information on basic physical and chemical properties

The following information is not a technical specification or sales specification.

(a) Appearance:	Silver quadrate solid battery.
(b) Odour:	Odourless.
(c) Odour threshold:	No information available.
(d) pH:	No information available.
(e) Melting point/freezing point:	No information available.
(f) Initial boiling point and boiling range:	No information available.
(g) Flash point:	No information available.
(h) Evaporation rate:	No information available.
(i) Flammability (solid, gas):	No information available.
(j) Upper/lower flammability or explosive limits:	No information available.
(k) Vapour pressure:	No information available.
(l) Vapour density:	No information available.
(m) Relative density:	No information available.
(n) Solubility (ies):	No information available.
(o) Partition coefficient: n-octanol/water:	No information available.
(p) Auto-ignition temperature:	No information available.
(q) Decomposition temperature:	No information available.
(r) Viscosity:	No information available.
(s) Explosive properties:	No information available.
(t) Oxidising properties:	No information available.

9.2 Other information

No information available.



Section 10. Stability and Reactivity.

10.1. Reactivity:	No information available.
10.2. Chemical stability:	Stable under normal conditions and pressures.
10.3. Possibility of hazardous reactions:	No information available.
10.4. Conditions to avoid:	Excess heat, exposure to water, mechanical abuse, electrical abuse (polarity reversal / short circuiting)
10.5. Incompatible materials:	Strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons.
10.6. Hazardous decomposition products:	Hazardous products are produced from fire conditions.

Section 11. Toxicological Information.

11.1. Information on toxicological effects

Potential health risks;

Eye; Contact with battery contents may cause severe irritation and burns. Eye damage is possible.

Skin; Contact with battery contents may cause severe irritation and burns.

Absorption through the skin will cause localized inflammation.

Ingestion; may cause severe and permanent damage to the digestive tract. May cause circulatory system failure.

Contents of an open battery can cause serious chemical burns to the mouth, oesophagus and gastrointestinal tract.

Inhalation; Inhalation of vapours or fumes released due to heat or leaking batteries may cause respiratory irritation.

Irritation may lead to chemical pneumonitis.

Inhalation can produce chronic productive cough and shortness of breath.

Section 12. Ecological Information.

When properly used and disposed of correctly, the battery does not present environmental hazard.

Do not release internal components into water ways, wastewater or ground water.

Section 13. Disposal Considerations.

Disposal of the battery must be in accordance with local authority regulations.

The battery should be completely discharged prior to disposal and the terminals taped or capped to prevent short circuit.

Do not dispose of batteries with household waste.

Do not dispose of batteries at landfill sites.

Do not incinerate batteries.



Section 14. Transport Information.

ADR. International Carriage of Dangerous Goods by Road.

14.1. UN number	UN 3480	
14.2. Name and Description	Lithium ion batteries	
	Label	9
	Special Provisions	188 230 310 348 376 377 636
	Limited Quantities	0
	Excepted Quantities	E0
	Packing Instructions	P903 P908 P909 LP903 LP904
	Special Packaging Provisions	-
14.3. Transport hazard class(es)	Class	9
	Classification Code	M4
	Transport Category	2
	Tunnel restriction code	E
14.4. Packing group	-	
14.5. Environmental hazards	Does not present an environmental hazard.	
14.6. Special precautions for user	No special precautions necessary.	

IATA. International Air Transport Association.

14.1. UN number	UN 3480	
14.2. UN Proper Shipping Name/Description	Lithium ion batteries	
	Hazard Label.	Miscellaneous
	Excepted Quantity	E0
	Packaging Instructions	Passenger Ltd Qty Cargo ERG Code
	Special Provisions	965 Section IB Forbidden 965 Section IB 9F A88 A99 A154 A164 A183
14.3. Transport hazard class(es)	Class or Division	9
14.4. Packing group	-	
14.5. Environmental hazards	Does not present an environmental hazard.	
14.6. Special precautions for user	No special precautions necessary.	

IMDG. International Maritime Dangerous Goods.

14.1. UN number	UN 3480	
14.2. UN proper shipping name	Lithium ion batteries	
	Special Provisions	188 230 310 348 957
	Limited Quantities	0
	Excepted Quantities	E0
	Packaging Instructions	P903
	Packing Provisions	-
14.3. Transport hazard class(es)	Class or Division	9
	Subsidiary Risk(s)	-
14.4. Packing group	II	
14.5. Environmental hazards	Does not present an environmental hazard	
14.6. Special precautions for user	No special precautions necessary.	
14.7. Transport in bulk – Maritime only.	Bulk transport is not applicable to this product	



Section 15. Regulatory Information.

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture:
No information available.

15.2. Chemical safety assessment: No information available.

Section 16. Additional Information.

Full text of Phrases and Statements used in Section 3;

H225: Highly flammable liquid and vapour.

H226: Flammable liquid and vapour.

H228: Flammable solid.

H290: May be corrosive to metals.

H302: Harmful if swallowed.

H311: Toxic in contact with skin.

H314: Causes severe skin burns and eye damage.

H315: Causes skin irritation.

H317: May cause an allergic skin reaction.

H318: Causes serious eye damage.

H319: Causes serious eye irritation.

H335: May cause respiratory 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.

H411: Toxic to aquatic life with long lasting effects.

R36: Irritating to eyes.

The above information is believed to be accurate and represents the best information currently available.

No warranty is expressed or implied by the above information.

We assume no liability resulting from use of the above information.

The end user should conduct their own investigations to determine the suitability of the above information for their particular purpose.

Issue level	Date	Revisions
1	09/10/15	First issue.
2	13/07/16	Sections 1, 3, 7, 8, 14, 15 & 16

End of Safety Data Sheet.