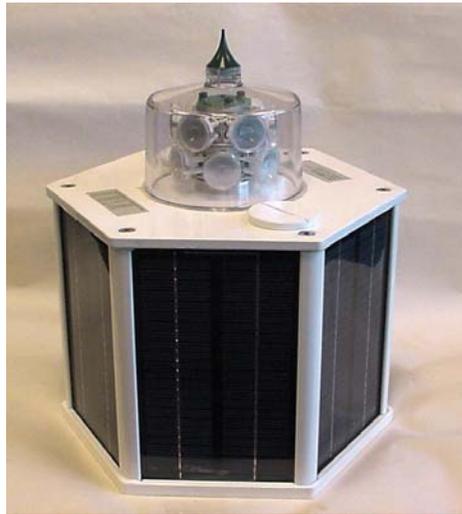


## BWT LIGHTING SELF-CONTAINED LED LANTERN INSTALLATION & SERVICING INSTRUCTIONS

The Coast Guard purchased 60 self contained LED lanterns from BWT Lighting, Inc., of Newark DE. These LED lanterns are intended as replacements for 155mm red and green lanterns currently using 0.55a and 0.77a lamps. The lantern has three intensity settings (high, medium and low), providing adjustable intensity of 85, 60 and 40 candelas, fixed-on. Although this lantern was purchased for fixed aids, the divergence is sufficient for use on buoys, as well.



The lantern is completely self-contained and has six solar panels, LED optic head and lithium-ion rechargeable battery packs.

### Intensity

The lantern can be programmed for high, medium or low intensity setting. Range is 4 nautical miles for all rhythms in either medium or low intensity setting, and 5 nautical miles in the high setting.

#### BWT Self Contained Red/Green Lantern Effective Intensities

Flash Rhythm	Intensity (low)	Intensity (med)	Intensity (high, optional)
FL(2)6	33 Candelas	50 Candelas	71 Candelas
FL6(.6)	30	45	64
FL4(.4)	27	40	57
FL2.5(.3)	24	36	68
FL(2+1)6	24	36	68
FL(2)5	24	36	68
Q	24	36	68

When replacing a 155mm lantern with a LED lantern, it is generally a good idea to target a LED lantern effective intensity that is at least equal to that of the 155mm lantern it replaces. For comparison, the effective intensities of 155 mm lanterns are shown below and are detailed on the BWT solar sizing program discussed below:

<b>155mm Red(Green) Lantern Effective Intensities in Candelas</b>				
<u>Flash Rhythm</u>	<u>0.55a Lamp</u>	<u>0.77a Lamp</u>	<u>1.15a Lamp</u>	<u>2.03a Lamp</u>
FL(2)6	30(35)	40(55)	60(75)	110(140)
FL6(.6)	25(30)	35(45)	50(65)	95(120)
FL4(.4)	20(25)	30(40)	40(55)	75(90)
FL2.5(.3)	20(20)	25(35)	35(40)	55(70)
FL(2+1)6	20(20)	25(35)	35(40)	55(70)
FL(2)5	20(20)	25(35)	35(40)	55(70)
Q	20(20)	25(35)	35(40)	55(70)

## **Solar Sizing**

The lanterns, for this shipment, are available in two colors (red and green) and three sizes, small, medium and large, part numbers 1-201, 1-202 and 1-203, respectively. The small and medium lanterns have two lithium-ion battery packs and the large has three. The progressively larger housings have more solar panel surface area and are capable of generating more power.

“Solar sizing” refers to picking the lantern with the appropriate power system. The selection will depend on the geographic location, color, light intensity setting, and flash rhythm. The red and green lanterns draw different amounts of power and must be sized individually. A solar sizing program for the BWT lanterns is available on our website: <http://www.uscg.mil/systems/gse/gse2/Publications.htm>.

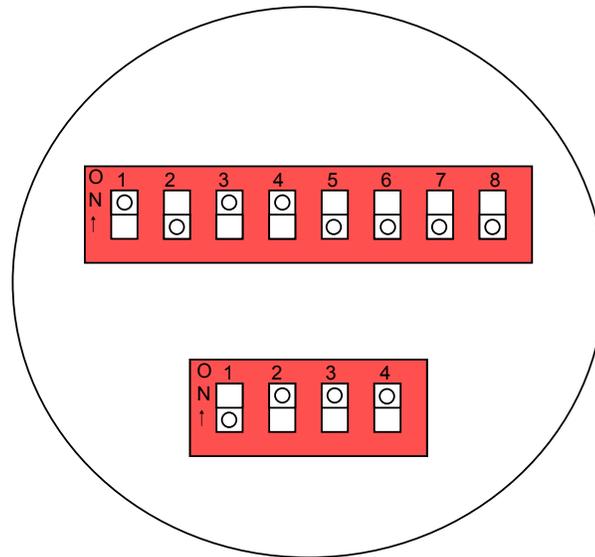
## **Programming**

The beacons must be programmed to the proper flash rhythm before deployment. The beacons should be programmed and bench tested in the shop prior to transit to the aid. Unscrew the access plugs on top of the lantern with a broad flat screwdriver or the blade of a knife inserted into the slot in the plug.



The flash rhythm is set using the 8-position dip switch.

<u>Rhythm</u>	<u>Setting</u>	<u>Rhythm</u>	<u>Setting</u>
FL2.5 (0.3)	10100000	Q	10001011
FL4 (0.4)	10110000	Mo(A)	01000101
FL6 (0.6)	10101000	FL (2) 5	01010100
FL (2) 6	11110100	FL (2+1) 6	01010010
Fixed On	11111111		



The intensity (high/medium/low; see Intensity Section) is set using the 4-position dip switch.

<u>Intensity</u>	<u>Setting</u>
High	1111
Medium	1010
Low	0111

The above picture shows the lantern set to a FL4(.4) and Low intensity setting. ON (switch in the upper position) is a “1” and OFF (switch in the lower position) is a “0.”

## Bench Test

Bench test each beacon at the selected intensity and flash rhythm for 24 hours in a darkened room (the daylight control is located on the optical head below the bird spike and may be covered to simulate darkness).

Turn the lantern ON by moving the selector switch, shown below, to the left.



Power Port and ON/OFF Switch

At the conclusion of the 24 hour test, turn the lantern OFF, wait a few seconds, then turn it ON and count the number of flashes the optical head generates as this corresponds to the state of charge of the battery (this occurs before the flash rhythm starts). Use the 120 VAC remote battery charger or allow the lantern to charge outside for the required interval, based on the state of charge if more than one flash is exhibited (indicating less than 80% state of charge).

If using the remote charger, open the switch cover to access the power port (when oriented to read the nameplate, this cover is to the right). Turn the lantern OFF, connect the charger to the power port and plug the AC cord into a 12 VAC source. Turn the lantern ON and note the two LEDs next to the ON/OFF switch. RED indicates less than 65% State of Charge (SOC), RED/GREEN indicates 65%-95% SOC and GREEN indicates greater than 95% SOC (ready for deployment). Turn the lantern OFF and then disconnect the charger. Turn the lantern back ON just prior to deployment.

When charging outside or to verify the SOC after using the remote charger, turn the lantern ON and note the number of flashes. Lanterns shall show 1 flash (81-100% state of charge) prior to deployment.

Model		201	201	202	202	203	203
Method		Hrs Charger	Days Sunlight	Hrs Charger	Days Sunlight	Hrs Charger	Days Sunlight
State of Charge	No. of Flashes						
0 -20%	5	11	18	11	12	15	13
21-40%	4	9	15	9	10	13	10
41-60%	3	7	11	7	7	10	8
61-80%	2	5	7	5	5	7	5
81-100%	1	3	4	3	2	5	3

**Battery Charger.** The batteries in the lantern may be charged using sunlight, but a faster and more accurate method is to use an external power supply. One power supply was shipped to each CG unit participating in the field test. Additional supplies may be purchased from Mouser Electronics, [www.mouser.com](http://www.mouser.com), enter the below part numbers in the “part number/keyword” field and look for “Phihong” under the field “Mfr” when the results are displayed.

Phihong power supply, model PSA65U-240-R using power cord AC30UNA-R

The Phihong PSA65U-240-R power supply is being replaced by the PSC60W-240-R. When the supply of PSA65U-240-R is exhausted, order the new supply using power cord AC15WNA-R.

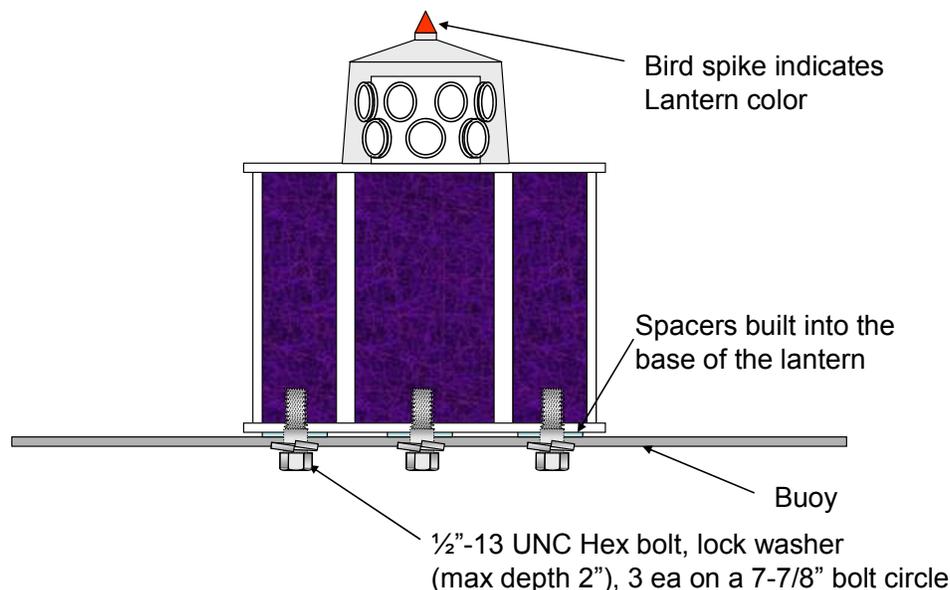
Power cords must be ordered separately.

**Important Note:** The batteries in this lantern are lithium-ion and they are shipped from BWT at 50% state of charge. These batteries actually degrade if they are stored long periods at full charge, so only recharge the lantern immediately prior to deployment, and to 30% state of charge if maintained in inventory for long periods of time. Unlike lead-acid, the lithium-ion battery will not be damaged if stored for long periods at a low state of charge (between 20%-50%; should be above 20%). The best way to *reduce* the state of charge is to leave the lantern ON in a darkened room in the FIXED-ON mode, low intensity setting. 12 hours of operation will reduce the state of charge by 10% for the 201 and 202 models; 20 hours for the 203 model, so if you need to drop the state of charge from 70% to 30%, allow the lantern to operate 48 hours for the 201 and 202 and 80 hours for the 203

## Installation

Prior to deployment, turn the lantern ON, note the state of charge (ensure that one flash is displayed), that an o-ring is installed on each cap and seal the threads with Loctite 545 (supplied with each lantern). Snap the tube neck below the cap and apply to the threads of each plug. Screw the caps in place until they are tight (minimum torque 25 ft-lbs) and the O-ring is compressed to the top plate.

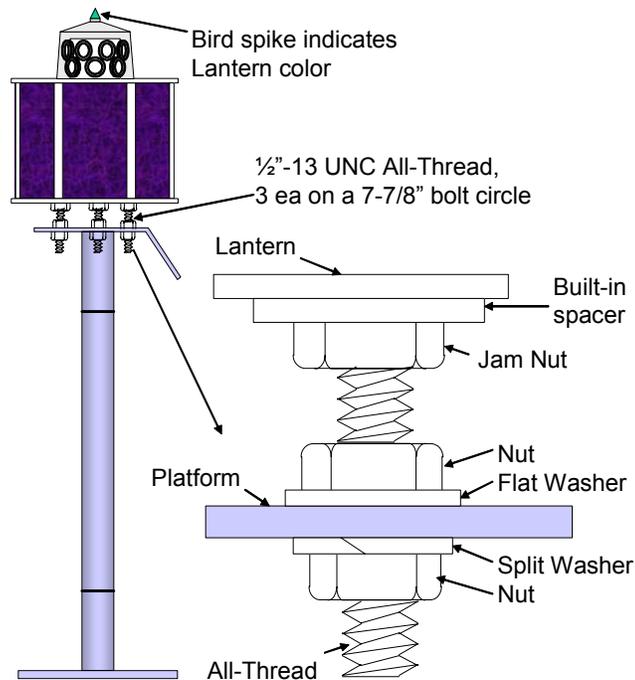
## Buoy:



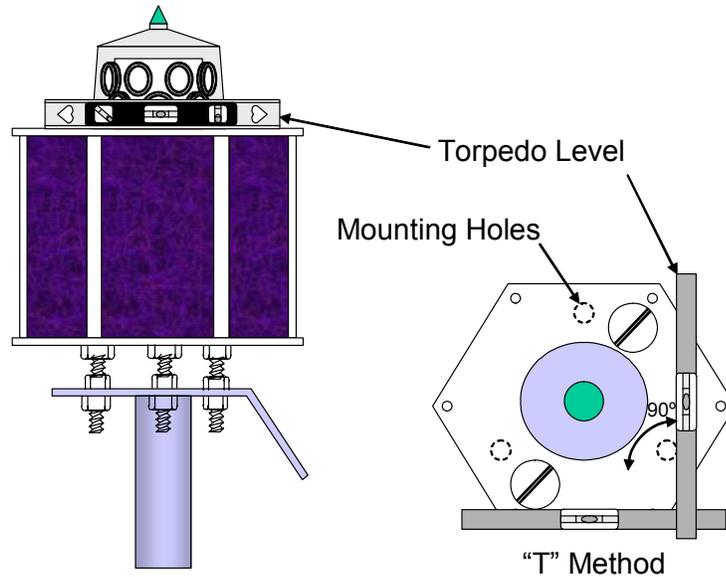
The lantern has provisions for a conventional 3-hole mount on a 7-7/8" bolt circle; however the lantern is fastened by blind holes in the base. Use three 316 stainless-steel 2" x 1/2" -13 coarse thread bolts with split lock washers as shown above. The spacers on the base of the lantern serve to isolate it from the buoy and help prevent distortion of the base if the top-plate on the buoy is warped. HINT: install a 4" length of 1/2" all-thread or a bolt with the head cut off in one insert and install the lantern on the buoy. Rotate the lantern until the other two bolts can be inserted, and then remove the stud and replace with the proper bolt. The bolts may be difficult to turn initially because of factory supplied anti-seize compound inside the inserts.

Cover the lantern with a jacket and note if it turns on and flashes at the correct rhythm. Note: there may be a delay of up to 10 seconds during these transitions.

### Installation - Structures



Insert three 6" lengths of stainless steel 1/2"-13 UNC All-Thread in the base of the lantern as far as they will go (about 2"). Thread three 1/2" stainless steel nuts and tighten against the base of the lantern. These act as jam nuts and prevent the All-Thread from loosening in the lantern. Thread three stainless steel 1/2" nuts about half-way up the All-Thread. Place three stainless steel flat washers on the platform, then install the lantern on the platform.



Place a torpedo level on top of the lantern in-line with two of the mounting holes. Using the "T" method taught at the NATON School, level the lantern using one or both of the nuts on top of the platform corresponding to those two mounting holes. Turn the level 90 degrees and level the lantern in that direction by turning the one nut on top of the platform opposite the other two nuts. The lantern should be level in both directions.

Install a stainless steel split lock washer and nut on the bottom of the All-Thread and secure the lantern to the platform. If the nothing moved, the lantern should still be level; check with the torpedo level and adjust, if necessary.

Cover the lantern with a jacket and note if it turns on and flashes at the correct rhythm. Note: there may be a delay of up to 10 seconds during these transitions.

## Servicing

**Do not open the lantern unless it is absolutely necessary.**

Servicing should be performed in accordance with the standard cycle established for the aid. The recommended cycle is every 2 or 3 years. Battery replacement should be scheduled at 6 year intervals.

Ensure that the solar panels and lens cover are clean. Wipe with a cloth dampened with mild soap and water, if necessary.

Cover the lantern with a jacket and note if it turns on and flashes at the correct rhythm. Note: there may be a delay of up to 10 seconds during these transitions.

## Troubleshooting

If the lantern is reported discrepant, inspect it for obvious signs of damage; broken lens cover, broken solar panels, lost bird spike, evidence of water inside lens cover. Replace the lantern.

If solar panels are just covered in bird guano, remove from service and recharge at CG Base. Clean the lens cover and solar panels with soft cloth dampened with mild soap and water. Install appropriate bird deterrents (consult with CG-432A and BWT Lighting.)

If the daylight control fails, replace the lantern.

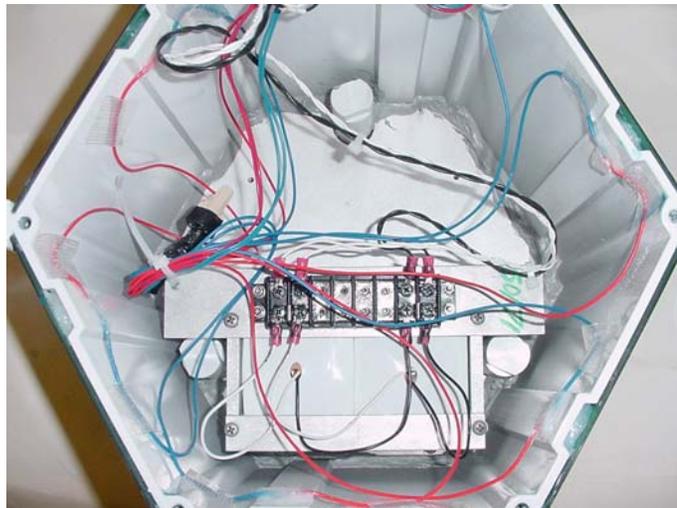
If solar panels are relatively clean, open the access plug to the right of the identification label. Turn the switch OFF, wait 10 seconds, then back ON and note the number of flashes. If no flash or 5 flashes, remove the lantern from service and replace with your spare. Return to base and analyze the lantern.

Using an indelible ink pen (Sharpie), place an index mark on the top of the lantern and one of the vertical solar panel supports so that the lantern can be reassembled in the same position.

Using a 4mm Allen wrench, remove the 6 countersunk screws from the top of the lantern. These screws have Loctite thread locker on their threads and may be difficult to remove. They may also have silicone in the hex portion of the screw which must be dug out to get full engagement of the Allen wrench.

Remove the top of the lantern and place on a box or shelf behind the lantern. **DO NOT allow the top of the lantern to hang by the leads from the circuit board.**

Inspect the interior wiring for loose or broken connections. Repair as required.



Pictured above is a small or medium lantern with a dual battery pack. The large lantern has a third battery pack on the opposite side of the terminal strip.

Disconnect the negative (white leads) from the battery at the terminal strip. Do not let these leads touch the positive leads on the terminal strip.

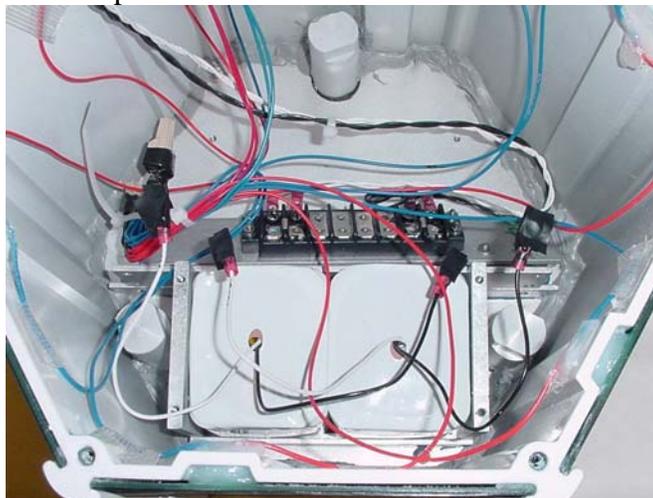
Wait a few minutes to let the surface charge dissipate, then measure the open circuit voltage of each battery pack. It should be above 14.8 volts. If lower, replace battery pack.

**saft**  
381760650402  
Li Ion Rechargeable  
4s1p - MP176065  
16.8 V : 6.8 Ah  
Black (+), White (-)  
Charging Instructions:  
Charge at 16.8V and C/2 rate  
(3.4A) tapering to 100mA or  
for 5 hours. Charge only in  
temperatures -30°C to 80°C.  
Date Code: 11/08 S/N: 001  
313 Crescent St.  
Valdese, NC 28690

The small and medium lanterns have two Saft 4s1p-MP176065 Lithium-Ion rechargeable battery packs and the large lantern has three packs. These batteries are available from BWT Lighting or Saft. Ordering instructions are in the contact section.

Remove the black and white leads from each battery pack at the terminal strip and insulate with black tape

Remove the two screws securing the terminal strip bracket and the two screws securing the aluminum angle to the battery box, as shown below. Do not lose fasteners and jumpers on the terminal strip.



Carefully remove each pack and set aside. Install new battery packs and wire so that the black wires from each battery pack are connected opposite the black wires on the terminal strip. Likewise, connect the white leads from the batteries opposite the white leads on the terminal strip.

Reattach the aluminum angle (with foam tape pressing down on top of the batteries) and the terminal strip to the top of the battery box.

Line up the index marks made with the Sharpie pen. Place the top of the lantern on the base and turn it on. Note the number of flashes corresponding to the state of charge and then check for proper operation.

Place a drop of Loctite 545 (provided with the lantern) on the threads of each screw. Reinstall the six Allen head screws and tighten in an alternating cross pattern until they are hand tight with a wrench.

Test the lantern again to ensure that there are no pinched wires.

## **Battery Disposal**

Lithium batteries shall be disposed of through DRMO with the following criteria:

- Proper shipping name: “Waste lithium-ion batteries, liquid cathode”
- Hazardous Class: 9
- Identification Number: UN3090
- Packing Group: II
- Label: Class 9
- EPA Hazardous Waste Number: D003

Additional info is available in the Hazardous Waste Management Manual, COMDT Instruction M16478.1B:

[http://cgcentral.uscg.mil/uscg\\_docs/portal/MyCG/EDITORIAL/bvimport/cg61/CIM\\_16478\\_1B.pdf](http://cgcentral.uscg.mil/uscg_docs/portal/MyCG/EDITORIAL/bvimport/cg61/CIM_16478_1B.pdf)

## **Service/Contact Info**

Technical questions, replacement components, including batteries are available from:

BWT Lighting, Inc  
825 Dawson Drive  
Suite #1  
Newark, DE 19713  
Voice: 302-709-0808 ext 1601  
Fax: 302-709-0807  
Attn: James R. Hoelsworth  
E-mail: [Sales@bwtlighting.com](mailto:Sales@bwtlighting.com)

Batteries are also available from Saft:

Saft Lithium & Military Battery Division  
313 Crescent Street  
Valdese, NC 28690  
828-874-4111

Part Number: 381760650401, Quote Number 2006459

### **Questions/Comments**

Questions and comments about this lantern and instructions should be directed to Mr. Jon Grasson at 202-475-5629 email [jon.t.grasson@uscg.mil](mailto:jon.t.grasson@uscg.mil)

**MSDS for Batteries** (attached)



## Material/Product Safety Data Sheet (MSDS-PSDS)

<b>MP/VL products</b>	<b>Rechargeable lithium-ion single cells and multi-cell battery packs</b>	<b>Simplified Advice Code</b>
<b>Revision 3 Date 06/2005</b>		<b>G</b>

1. Identification of the Substance or Preparation and Company		
<b>Product</b>	<b>Rechargeable lithium-ion cylindrical and medium prismatic single cells and multi-cell battery packs</b>	
<b>Production sites</b>	Saft America Inc. 313 Crescent Street Valdese North Carolina 28690 USA Tel. No. +1 (828) 874 4111 Fax No. +1 (828) 874 2431	Saft Rue Georges Leclanché BP 1039 86060 Poitiers cedex 9 FRANCE +33 (0)5 49 55 48 48 +33 (0)5 49 55 48 50
<b>Emergency contacts</b> Within the USA	+1 (703) 527 3887 +1 (800) 424 9300	(CHEMTREC US Service Center)

2. Composition & Information on Ingredients					
Each cell consists of an hermetically sealed metallic container containing a number of chemicals and materials of construction of which the following could potentially be hazardous upon release.					
Ingredient	Content	CAS No.	CHIP Classification		
Lithium metal	0 <i>(in spite of their name, these batteries do not contain any lithium metal)</i>				
LiCoO <sub>2</sub> (Lithium cobaltite)	≈ 30%	12190-79-3			R22, R43 S2, S22, S24, S26, S36, S37, S45
Organic solvents	≈ 13% EA (Ethyl Acetate) EC (Ethyl Carbonate) DMC (DiMethyl Carbonate) <i>(Boiling Points: EA: -84°C; EC: +38°C DMC: +4°C)</i>	141-78-6 96-49-1 616-38-6			R21, R22, R41, R42, R43 S2, S24, S26, S36, S37, S45
LiPF <sub>6</sub> (Lithium hexafluoro phosphate)	≈ 1%		 		R14, R21, R22, R4, R43 S2, S8, S22, S24, S26, S36, S37, S45
Carbon (C <sub>n</sub> )	≈ 16%	1333-86-4			NONE KNOWN
<i>Amount varies depending on cell size</i>					



<b>3. Hazards Identification</b>	
<p>Do not short circuit, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion. The rechargeable lithium-ion batteries described in this Product Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer.</p> <p>Under normal conditions of use, the electrode materials and liquid electrolyte they contain are not exposed to the outside, provided the battery integrity is maintained and seals remain intact. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery container. Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/explosion/fire may follow, depending upon the circumstances.</p>	

<b>4. First Aid Measures</b>	
<b>Inhalation</b>	Remove from exposure, rest and keep warm. In severe cases obtain medical attention.
<b>Skin contact</b>	Wash off skin thoroughly with water. Remove contaminated clothing and wash before reuse. In severe cases obtain medical attention.
<b>Eye contact</b>	Irrigate thoroughly with water for at least 15 minutes. Obtain medical attention.
<b>Ingestion</b>	Wash out mouth thoroughly with water and give plenty of water to drink. Obtain medical attention.
<b>Further treatment</b>	All cases of eye contamination, persistent skin irritation and casualties who have swallowed this substance or been affected by breathing its vapours should be seen by a Doctor.

<b>5. Fire Fighting Measures</b>	
<p>CO<sub>2</sub> extinguishers, halon or copious quantities of water or water-based foam can be used to cool down burning Li- ion cells and batteries.</p> <p>Do not use for this purpose sand, dry powder or soda ash, graphite powder or fire blankets.</p>	
<b>Extinguishing media</b>	Use water or CO <sub>2</sub> on burning Li-ion cells or batteries

<b>6. Accidental Release Measures</b>	
<p>Remove personnel from area until fumes dissipate. If the skin has come into contact with the electrolyte, it should be washed thoroughly with water.</p> <p>Sand or earth should be used to absorb any exuded material. Seal leaking battery and contaminated absorbent material in plastic bag and dispose of as Special Waste in accordance with local regulations.</p>	

7. Handling and Storage	
<b>Handling</b>	Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non conductive (i.e. plastic) trays.
<b>Storage</b>	Store in a cool (preferably below 30°C) and ventilated area, away from moisture, sources of heat, open flames, food and drink. Keep adequate clearance between walls and batteries. Temperature above 70°C may result in battery leakage and rupture. Since short circuit can cause burn, leakage and rupture hazard, keep batteries in original packaging until use and do not jumble them.
<b>Other</b>	Follow Manufacturers recommendations regarding maximum recommended currents and operating temperature range. Applying pressure on deforming the battery may lead to disassembly followed by eye, skin and throat irritation.

8. Exposure Controls & Personal Protection	
<b>Occupational exposure standard</b>	Compound: LiCoO <sub>2</sub> 0.1 mg/m <sup>3</sup> max. (OSHA) EC, EA, DMC                N/A LiPF <sub>6</sub> N/A
	<b>Respiratory protection</b> In all fire situations, use self-contained breathing apparatus.
	<b>Hand protection</b> In the event of leakage wear gloves.
	<b>Eye protection</b> Safety glasses are recommended during handling.
	<b>Other</b> In the event of leakage, wear chemical apron.



9. Physical and Chemical Properties	
<b>Appearance</b>	Cylindrical or prismatic shape
<b>Odour</b>	
<b>pH</b>	Not Applicable
<b>Flash point</b>	Not applicable unless individual components exposed
<b>Flammability</b>	Not applicable unless individual components exposed
<b>Relative density</b>	Not applicable unless individual components exposed
<b>Solubility (water)</b>	Not applicable unless individual components exposed
<b>Solubility (other)</b>	Not applicable unless individual components exposed

10. Stability and Reactivity	
Product is stable under conditions described in Section 7.	
<b>Conditions to avoid.</b>	Heat above 70°C or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble Short circuit. Expose over a long period to humid conditions.
<b>Materials to avoid</b>	
<b>Hazardous decomposition Products</b>	CO, CO <sub>2</sub>

11. Toxicological Information	
<b>Signs &amp; symptoms</b>	None, unless battery ruptures. In the event of exposure to internal contents, corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.
<b>Inhalation</b>	Lung irritant.
<b>Skin contact</b>	Skin irritant
<b>Eye contact</b>	Eye irritant.
<b>Ingestion</b>	Tissue damage to throat and gastro-respiratory tract if swallowed.
<b>Medical conditions generally aggravated by exposure</b>	In the event of exposure to internal contents, eczema, skin allergies, lung injuries, asthma and other respiratory disorders may occur.

12. Ecological Information	
<b>Mammalian effects</b>	None known if used/disposed of correctly.
<b>Eco-toxicity</b>	None known if used/disposed of correctly.
<b>Bioaccumulation potential</b>	None known if used/disposed of correctly.
<b>Environmental fate</b>	None known if used/disposed of correctly.

13. Disposal Considerations	
Do not incinerate, or subject cells to temperatures in excess of 70°C. Such abuse can result in loss of seal, leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.	



14. Transport Information	
<b>Label for conveyance</b>	For the single cell batteries and multicell battery packs that are non-restricted to transport, use lithium-ion batteries inside label. For the single cell batteries and multicell battery packs which are restricted to transport (assigned to the Miscellaneous Class 9), use Class 9 Miscellaneous Dangerous Goods and UN Identification Number labels. In all cases, refer to the product transport certificate issued by the Manufacturer.
<b>UN number</b>	UN 3090
<b>Shipping name</b>	Lithium Batteries
<b>Hazard classification</b>	Depending on their equivalent lithium metal content, some single cells and small multicell battery packs may be non- assigned to Class 9 (Refer to Transport Certificate)
<b>Packing group</b>	II
<b>IMDG Code</b>	9033
<b>CAS</b>	
<b>EmS No.</b>	4.1-06
<b>Marine pollutant</b>	No
<b>ADR Class</b>	Class 9

15. Regulatory Information			
<b>Risk phrases</b>	LiCoO <sub>2</sub>	R22 R43	Harmful if swallowed. May cause sensitization by skin contact.
	EA/EC/DMC Organic solvents mix	R21 R22 R41 R42 R43	Risk of damage to the skin Harmful if swallowed. Risk of serious damage to eye. May cause sensitization by inhalation. May cause sensitization by skin contact.
	LiPF <sub>6</sub>	R14 R21 R22 R41 R43	Reacts with water Harmful in contact with skin Harmful if swallowed. Risk of serious damage to eye May cause sensitization by skin contact.
<b>Safety phrases</b>	LiCoO <sub>2</sub>	S2 S22 S24 S26 S36 S37 S45	Keep out of reach of children Do not breathe dust Avoid contact with skin. In case of contact with eyes, rinse immediately with plenty of water. Wear suitable protective clothing. Wear suitable gloves. In case of incident, seek medical attention.
	EA/EC/DMC Organic solvents mix	S2 S24 S26 S36 S37 S45	Keep out of reach of children. Avoid contact with skin. In case of contact with eyes, rinse immediately with plenty of water. Wear suitable protective clothing. Wear suitable gloves. In case of incident, seek medical attention.
	LiPF <sub>6</sub>	S2 S8 S22 S24 S26 S36 S37 S45	Keep out of reach of children. Keep away from moisture Do not breathe dust Avoid contact with skin In case of contact with eyes, rinse immediately with plenty of water. Wear suitable protective clothing. Wear suitable gloves. In case of incident, seek medical attention.
<b>UK regulatory references</b>	Classified under CHIP		



#### **16. Other information**

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied ) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.

This information relates to the specific materials designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use.

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