

Material Safety Data Sheet for GP Lithium-ion rechargeable cells/batteries) Section II

Document Number: WI-RD-P03-158 Revision: 1 Page 1 of 8

IDENTITY (As Used on Label and List)	Note: Blank spaces are not permitted if any item is not applicable or no information is available, the
Lithium Ion cell	space must be marked to indicate that.
Section I – Information of Manuf	acturer
Manufacturer's Name	Emergency Telephone Number
GPI International Ltd.	Within USA and Canada: 1-800-424-9300 Outside USA and Canada:+1 703-527-3887
Address (Number, Street, City State, and ZIP Code)	Telephone Number for information
8/F GP Building, 30 Kwai Wing Road, Kwai Chung, N.T. H.K.	852-2484-3333
	Date of prepared and revision
	17 Jan, 2013

Section II – Ingredients / Identity Information

Chemistry: Lithium Cobalt oxide

Description:	CAS#	Approximate % of total weight
Aluminum	7429-90-5	3-6%
Artificial Graphite	7740-44-0	10-20%
Copper	7440-50-8	7-10%
Iron	7439-89-6	0-25%
Lithium Cobaltate (LiCoO2)	12190-79-3	35-55%
Organic electrolyte	N.A.	10-20%

Chemistry: Lithium mixed oxide

Description:	CAS#	Approximate % of total weight
Aluminum	7429-90-5	3-6%
Artificial Graphite	7740-44-0	16-20%
Copper	7440-50-8	7-10%
Iron	7439-89-6	0-25%
Lithium Mixed Metal Oxide (LiMO ₂)	N.A.	30-50%
Lithium Cobaltate (LiCoO ₂)	12190-79-3	0-10%
Lithium Manganate (LiMn ₂ O ₄)	12057-17-9	0-10%
Organic electrolyte	N.A.	10-20%

M = One metal or a combination of metals (Co, Mn, Ni or Al)

Chemistry: Lithium Iron Phosphate

Description:	CAS#	Approximate % of total weight
Aluminum	7429-90-5	3-6%
Artificial Graphite	7740-44-0	10-20%
Copper	7440-50-8	7-10%
Iron	7439-89-6	0-25%
Lithium Iron Phosphate	15365-14-17	35-55%
Organic electrolyte	N.A.	10-20%



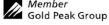
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	– Physical / (Chemical Ch	naracteristics			
Boiling Point N.A.		Specific Gravity (H ₂ O=1) N.A.				
Vapor Pressure (N.A.		Melting Po	oint			
Vapor Density (A	AIR=1)	Evaporation N.A.	n Rate (Butyl Acetate)			
Solubility in Wat N.A.	ter	1				
Appearance and	Odor ismatic shape, odor	rloss				
Cymidical of pi	ismane shape, odol	iless				
Section IV	– Hazard (Classificatio	on			
				d chemical danger of leakage hazardous materials may com		
If the electrol inflammable		water, it will g	enerate hydrogen fluor	ide. Do not expose to fire, as	s the leaked electrolyte is	
	 Reactivity 	/ Data				
Stability	Unstable		Conditions to Avoid			
	Stable	X				
Incompatibility (Materials to Avoid)				
Hazardous Decor	mposition or Bypro	oducts				
Hazardous Polymerization	May Occur		Conditions to Avoid			
	Will Not Occur	X				
	– Health H					
Route(s) of		Inhalation?	Skin?	Ingestion?		
Entry Health Hazard	d (Acute and C	hronic) / Toxic	N.A. clogical information	N.A.	N.A.	
Ticarui Tiazar	a (ricute and C	mome) / Toxic	nogical information			
In case of	of electrolyte leaka	ge, skin will be itc	hy when contaminated with e	electrolyte.		
In conta	ct with electrolyte	can cause severe i	rritation and chemical burns.			
			itation of the upper respirator	ry tract and lungs.		
In case of	of electrolyte vapor	or splash, eye con	ntact causes inflammation.			
Section VI	II – First Aid	l Measures				
First Aid Prod	cedures					
If electro	olyte leakage occur	rs and makes conta	act with skin, wash with plent	y of water immediately.		
If electro	olyte comes into co	ontact with eyes, w	rash with copious amounts of	water for fifteen (15) minutes, and co	ontact a physician.	
Member						





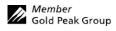
Material Safety Data Sheet for GP Lithium-ion rechargeable cells/batteries) Section II

Section VIII — Fire and Explosion Hazard Data Flash Point (Method Used) Ignition Temp. N.A. N.A. N.A. N.A. N.A. N.A. N.A. N.	Document Number: WI-RD-P03-158		Revision:	1	Page 3 of 8
Flash Point (Method Used) Ignition Temp. Flammable Limits LEL N.A. N.	If electrolyte vapors are in	haled, provide fresh air	and seek medical attention if re-	spiratory irritation develop	os. Ventilate the contaminated area.
Flash Point (Method Used) Ignition Temp. Flammable Limits LEL N.A. N.					
Extinguishing Media Carbon Dioxide, Dry Chemical or Foam extinguishers can be used for battery BUT water extinguisher is not suitable. Special Fire Fighting Procedures N.A. Unusual Fire and Explosion Hazards Do not dispose of battery in fire - may explode. Do not short-circuit battery - may cause burns. Section IX — Measures for fire extinction In case of fire, it is permissible to use Carbon Dioxide, Dry Chemical or Foam extinguishers on these cells or their packing material. Cool exterior of cells if exposed to fire to prevent rupture. Fire fighters should wear self-contained breathing apparatus. Section X — Accidental Release or Spillage Steps to Be Taken in Case Material is Released or Spilled Cells that are leakage should be handled with rubber gloves. Avoid direct contact with electrolyte. Wear protective clothing. Section XI — Handling and Storage Safe handling and storage advice Cells should be handled and stored carefully to avoid short circuits. Do not store in disorderly fashion, or allow metal objects to be mixed with stored cells. Never disassemble a battery. Do not breathe cell vapors or touch internal material with bare hands. Keep cells between -20°C and 35°C for prolong storage. When the cells are closed to fully charged, the storage temperature should be between -20°C and should be controlled at 10-20°C during			azard Data		
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Annual state and analysis of signs in a salising	When the cells are closed	to fully charged, the stor	rage temperature should be betw	veen -20°C and 30°C and	should be controlled at 10-20°C during
transportation and packed with efficient air ventilation.	transportation and packed with effi	cient air ventilation.			
					-

Section XII – Exposure Controls / Personal Protection

Engineering measures:

No engineering measure is necessary during normal use. In case of internal leakage of cell materials, operate the local exhaust or enhance ventilation





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Control parameters:

Common chemical name / General name	ACGIH	I (2002)
	TLV-TWA	BEI
Aluminum		N.A.
	5mg/m ³ (inflammable powder)	
	5mg/m ³ (weld fume)	
Carbon (Artificial graphite)	2mg/m ³ (inhalant coarse particulate)	N.A.
Copper		N.A.
	1.0mg/m ³ (a coarse particulate, mist)	
Lithium cobaltate (LiCoO2)	0.02mg/m ³ (as cobalt)	N.A.
Organic electrolyte	N.A.	N.A.

ACGIH: American Conference of Governmental Industrial Hygienists, Inc.

TLV-TWA: Threshold Limit Value - Time Weighted Average concentration

BEI: Biological Exposure Indices

Personal protective equipment:

Respiratory protection: Respirator with air cylinder, dust mask

Hand protection: Protective gloves

Eye protection: Goggle or protective glasses designed to protect against liquid splashes

Skin and body protection: Working clothes with long sleeve and long trousers

Section XIII – Ecological Information

Do not bury or throw out into the environment as a cell and the internal materials remain in the environment.

Section XIV - Disposal Method

Dispose of cells according to government regulations.

Section XV - Transportation Information

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All GP lithium-ion cells/batteries shown in this MSDS comply to the necessary requirements under the UN Recommendations on the Transport of Dangerous Goods Model Regulations and UN Manual of Tests and Criteria as referenced in the following transportation regulations:

The unit Wh is equal to Rated capacity (Ah) x Nominal voltage (V).

UN No.	Shipping modes	Regulations	Packing instructions	Limit of Wh	Classification	Lithium handling	Class 9 DG label
						label	
UN3480	USA	US Department of	Transportation	<=20Wh(cell)	Non-dangerous	Needed	Not necessary
		of Hazardous Subs	tances (HMR)	<=100Wh(battery)	goods		
	Air	ICAO/IATA DGR	PI965 Section	IIa: <=2.7Wh	Non-dangerous	Needed	Not necessary
		54th edition	II	IIb: >2.7 to $<=20$ Wh	goods		
				(<=8 cells)			
				(Cell)			
				IIa: <=2.7Wh			
				IIb: >2.7 to $<=100$ Wh			
				(<=2 batteries)			
				(Battery)			
	Sea	IMO/IMDG	P903	<=20Wh(cell)	Non-dangerous	Needed	Not necessary
				<=100Wh(battery)	goods		
	Road/Rail	ADR / RID	P903	<=20Wh(cell)	Non-dangerous	Needed	Not necessary
			P903a	<=100Wh(battery)	goods		
			P903b				

Section XVI – Regulatory Information

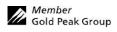
Special requirement be according to the local regulatories.

Section XVII - Other Information

The data in this Material Safety Data Sheet relates only to the specific material designated herein.

WATT-HOUR FOR LITHIUM ION BATTERY

Chemistry	Model	Rated capacity (Ah)	Rated voltage (V)	Watt hour (Wh)
	GP0820L07	0.075	3.7	0.278
	GP0825L11	0.110	3.7	0.407
	GP0828L12	0.125	3.7	0.463
Lithium Cobalt oxide	GP0836L15	0.155	3.7	0.574
	GP0836L17	0.170	3.7	0.629
	GP0840L18	0.180	3.7	0.666
	GP1015L08	0.085	3.7	0.315
	GP1018L10	0.105	3.7	0.389
	GP1022L15	0.155	3.7	0.574



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	CD10201.20	0.205		0.750
	GP1029L20	0.205	3.7	0.759
	GP1043L36	0.360	3.7	1.332
	GP1051L35	0.355	3.7	1.314
	GP1229L30	0.325	3.7	1.203
	GP1443L68	0.680	3.7	2.516
	GP1450L85	0.850	3.7	3.145
	GP1465L115	1.150	3.7	4.255
	GP1750L125	1.250	3.7	4.625
	GP1767L185	1.850	3.7	6.845
	GP1850L140	1.400	3.7	5.180
	GP1865L220	2.200	3.7	8.140
	GP1450L85	0.850	3.7	3.145
	GP1465L115	1.150	3.7	4.255
	GP1750L125	1.250	3.7	4.625
	GP1767L185	1.850	3.7	6.845
	GP1850L140	1.400	3.7	5.180
	GP1865L220	2.200	3.7	8.140
Lithium Cobalt oxide	GP413048L68	0.680	3.7	2.516
	GP413443L63	0.630	3.7	2.331
	GP413450L78	0.780	3.7	2.886
	GP503020L21	0.210	3.7	0.777
	GP503040L54	0.540	3.7	1.998
	GP503048L78	0.780	3.7	2.886
	GP503436L60R	0.600	3.7	2.220
	GP503449L98R	0.980	3.7	3.626
	GP563136L72R	0.720	3.7	2.664
	GP603450L114R	1.140	3.7	4.218
	GP603465L144	1.440	3.7	5.328
	GP623040L74	0.740	3.7	2.738
	GP623048L104	1.040	3.7	3.848
	GP743442L118R	1.180	3.7	4.366
	GP813433L75	0.750	3.7	2.775
	GP813448L137	1.370	3.7	5.069
	GP843042L105	1.050	3.7	3.885
	GP863734L120R	1.200	3.7	4.440

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	T	T	1	
	GP103450L180R	1.850	3.7	6.845
	GP413450L78	0.780	3.7	2.886
	GP503048L78	0.780	3.7	2.886
	GP503449L98R	0.980	3.7	3.626
	GP603450L114R	1.140	3.7	4.218
	GP603465L144	1.440	3.7	5.328
	GP623040L74	0.740	3.7	2.738
	GP623048L104	1.040	3.7	3.848
	GP743442L118R	1.180	3.7	4.366
	GP813433L75	0.750	3.7	2.775
	GP813448L137	1.370	3.7	5.069
	GP843042L105	1.050	3.7	3.885
	GP863734L120R	1.200	3.7	4.440
	GP103450L180R	1.850	3.7	6.845
	DLP333450	0.52	3.7	1.924
	DLP391230	0.105	3.7	0.3885
	DLP413239	0.465	3.7	1.7205
	DLP491538	0.23	3.7	0.851
Lithium Cobalt oxide	DLP521630	0.24	3.7	0.888
	DLP611235	0.2	3.7	0.74
	DLP381225	0.08	3.7	0.296
	DLP412023	0.13	3.7	0.481
	DLP521630	0.24	3.7	0.888
	DLP392339	0.275	3.7	1.0175
	DLP513040	0.56	3.7	2.072
	DLP983450	1.85	3.7	6.845
	DLP604050	1.14	3.7	4.218
	GP413450L78	0.780	3.7	2.886
	GP503048L78	0.780	3.7	2.886
	GP503449L98R	0.980	3.7	3.626
	GP603450L114R	1.140	3.7	4.218
	GP603465L144	1.440	3.7	5.328
	GP623040L74	0.740	3.7	2.738
	GP623048L104	1.040	3.7	3.848
	GP743442L118R	1.180	3.7	4.366
	GP813433L75	0.750	3.7	2.775
	GP813448L137	1.370	3.7	5.069
L	1			

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T - 1 + 1 - 1	GP843042L105	1.050	3.7	3.885
Lithium Cobalt oxide	GP863734L120R	1.200	3.7	4.440
CODAIC OXIGE	GP103450L180R	1.850	3.7	6.845

Chemistry	Model	Rated capacity (Ah)	Rated voltage (V)	Watt hour (Wh)
Lithium mixed oxide	GP18650CH	2.20	3.60	7.92
	GP1865T220	2.20	3.60	7.92
	GP1450L85	0.850	3.7	3.145
	GP1465L115	1.150	3.7	4.255
	GP1750L125	1.250	3.7	4.625
	GP1767L185	1.850	3.7	6.845
	GP1850L140	1.400	3.7	5.180
	GP1865L220	2.200	3.7	8.140
	DLP2999115	3.1	3.7	11.47
	DLP3968100	3	3.7	11.1
	DLP5054105	3.05	3.7	11.285
	DLP535068	2	3.7	7.4
	GP4105054T1000	10.000	3.65	36.5
	GP4105054T1000L	10.000	3.65	36.5
	GP4105054T1400	13.600	3.65	49.6

Chemistry	Model	Rated capacity (Ah)	Rated voltage (V)	Watt hour (Wh)
Lithium Iron Phosphate	GPEV45LF00 GPSEO45LF003	42	3.2	134.4
	GPEV30LF00 GPSEO30LF004	30	3.2	96
	GPEV18LF00 GPSEO18LF002	16	3.2	51.2