

## 安全資料表Safety Data Sheet

## 1. 廠商與產品資訊Identification of product and company

產品訊息 Product Information	二次充電鋰離子電池組 Rechargeable Lithium-Ion Battery Pack		
製造商 Manufacturer	矽谷能源股份有限公司 SEGL ENERGY CO., LTD.		
地址 Address	基隆市安樂區武訓街 55 號 No.55, Wuxun St., Anle Dist., Keelung City 204, Taiwan		
電話 Telephone	+886-2-2428-9358		
產品料號 GETAC P/N	客戶產品料號 Customer P/N	型號名稱 Model Name	能量 Energy(Wh)
EA303L35	EA303L35-SSE099	EA303L35	496

## 2. 危害資訊Hazards Identification

※此產品是GHS體系的範圍之外，因為它被認為是一個“成品”。

This product is outside the scope of GHS system since it's considered as an "article".

於正常使用及存放的情形(參考製造商的說明書/建議)產品是無危險性的。

異常行為(機械、溫度、電流)將會破壞安全裝置及電池內部並可能增加下述風險：電解液的洩漏、電子材料的阻尼、電池的洩壓 / 起火 / 燃燒 / 爆炸。

短路，穿刺，焚燒，粉碎，浸泡於水中，強制放電，超過溫度範圍（製造商規定的溫度範圍）及其他異常操作可能會導致產品起火或爆炸的危險。

In suitable operating and storing (reference to manufacturer's specification / recommendations), the product is non-hazardous.

The abnormal activity(machinery, temperature, electricity) will break safety valve / battery container and may increase following risk: electrolyte leaking, electrode materials damping, battery venting / firing / burning / exploding.

The short-circuiting, puncturing, incinerating, crushing, immersing in water, force-discharging, exceeding temperature range(manufacturer's specified temperature range) and other abnormal operating may cause the product to risk of fire or explosion.

## 人體健康影響Human Health Effects

吸入 Inhalation	電解液的蒸氣會刺激呼吸道。 The steam of the electrolyte will stimulate a respiratory tract.
皮膚接觸 Skin Contact	電解液的蒸氣會刺激皮膚。皮膚接觸電解液會造成對皮膚的疼痛和刺激。 The steam of the electrolyte stimulates a skin. The electrolyte skin contact causes a sore and stimulation on the skin.
眼睛接觸 Eye Contact	電解液的蒸汽會刺激眼睛。眼睛接觸電解液會造成對眼睛的疼痛和刺激。尤其是相關物質，會導致使眼睛嚴重發炎。 The steam of the electrolyte stimulates eyes. The electrolyte eye contact causes a sore and stimulation on the eye. Especially, substance that causes a strong inflammation of the eyes is contained.



環境影響Environmental Effects
電芯會持續存在於環境中，請勿隨意棄置。 Since a battery cell remains in the environment, do not throw out it into the environment.
特殊危害Specific Hazards
如果電解液與水的接觸時會產生有毒氣體氟化氫。 由於洩漏的電解液是易燃液體，請勿接近高溫或火源。 If the electrolyte contacts with water, it will generate detrimental hydrogen fluoride. Since the leaked electrolyte is inflammable liquid, do not bring close to fire.

### 3. 組成資訊Composition Information

※電芯為產品於異常狀況下最有可能產生危險意外的零部件

Cell is the only one component of battery pack that may produce risk of harm in abnormal situation.

電芯Cell		
組成 Composition	化學編號 CAS NO.	含量% [weight] Content / Content range
鈷鋰錳鎳氧化物 Cobalt lithium manganese nickel oxide	182442-95-1	34
碳 Carbon	7440-44-0	10-30
碳酸乙烯酯 1,3-Dioxolan-2-one	96-49-1	2-10
電解質 Lithium hexafluorophosphate(1-)	21324-40-3	2-10
銅 Copper	7440-50-8	2-10
鋁 Aluminum	7429-90-5	2-10
其他(非危害成份) Others(non-hazardous ingredients)	-	<11

### 4. 急救措施 (電芯意外破裂或洩漏)

#### First Aid Measures (in case of leaking or accidentally opened cells)

如電池組破裂或爆炸請疏散污染區員工，並確保最大通風以驅散腐蝕性氣體、煙霧和難聞氣味。如果發生事故，必須採取以下措施：

In case of battery pack breakage or burst, please evacuate employees from the contaminated area and ensure maximum ventilation in order to disperse corrosive gas, smoke and unpleasant odors.

If it occurs accident, following measures must be taken:

吸入 Inhalation	一般正常搬運和使用並無影響。 立即離開污染區域，並使其通風。多休息，注意保暖。如果需要，給予氧氣和呼吸輔助。立即就醫。 No effect under routine handling and use. Leave contaminated area immediately and make it ventilate. Take rest and keep warm. If needed, give oxygen and breathing aid. Consult a doctor immediately.
皮膚接觸 Skin Contact	一般正常搬運和使用並無影響。 立即脫去污染的衣服和鞋子。用冷水徹底沖洗皮膚15分鐘以上。立即就醫。 No effect under routine handling and use. Remove contaminated clothes and shoes immediately. Wash skin thoroughly with cold water more than 15 minutes. Consult a doctor.



眼睛接觸 Eye Contact	<p>一般正常搬運和使用並無影響。</p> <p>不要用手揉自己的眼睛。立即徹底用冷水沖洗眼睛至少15至30分鐘。立即就醫。</p> <p>No effect under routine handling and use.</p> <p>Do not rub one's eyes. Immediately and thoroughly wash eyes with cold water at least 15 to 30 minutes. Seek medical attention immediately.</p>
攝入 Ingestion	<p>一般正常搬運和使用是無法攝入的。</p> <p>用冷水徹底清洗口腔。</p> <p>如果病人是清醒的，讓病人喝大量牛奶/水。立即就醫。</p> <p>The product can't ingest under routine handling and use.</p> <p>Wash mouth with cold water thoroughly.</p> <p>If the patient is awake, let patient drink large milk / water. Seek medical attention immediately.</p>

## 5. 滅火措施Fire-Fighting Measures

滅火劑 Extinguishing Agent	<p>適用的滅火劑：大量的水，二氧化碳，氮氣，化學乾粉滅火劑和消防泡沫。</p> <p>小心從火焰中噴射出的燃燒物。</p> <p>Suitable extinguishing media: Plenty of water, carbon dioxide gas, nitrogen gas, chemical powder fire extinguishing medium and fire foam.</p> <p><b>Be careful of burning pieces of flammable particles may be ejected from the fire.</b></p>
滅火方式 Extinguishing Method	<p>滅火劑可用來降低燃燒的鋰離子電芯及電池組的溫度。</p> <p>小心從火焰中噴射出的燃燒物。</p> <p>Extinguishing agent can be used to cool down burning Li-ion cells and batteries.</p> <p>Be careful of burning pieces of flammable particles may be ejected from the fire.</p>
特殊保護設備 Specific Protection Equipment	<p>呼吸保護裝置<b>Respiratory protection</b>：</p> <p>氣瓶式或保護防塵面照式的呼吸設備 (Respiratory equipment of a gas cylinder style or protection-against-dust mask)</p> <p>手部保護裝置<b>Hand protection</b>：</p> <p>防護手套 (Protective gloves)</p> <p>眼部保護裝置<b>Eye protection</b>：</p> <p>護目鏡或防止液體飛濺設計的防護眼鏡 (Goggle or protective glasses designed to protect against liquid splashes)</p> <p>皮膚及身體保護裝置<b>Skin and body protection</b>：</p> <p>防護衣 (Protective cloth)</p>
其他注意事項 Other Attention	<p>當溫度高於100°C (212°F)或燃燒解體時可能暴露危害物質。</p> <p>電解液式可燃液體必須隨時遠離熱源焊火源。</p> <p>如果電芯/電池暴露於火災，冷卻蓄電池外部以避免其破裂。</p> <p>疏散火災現場區域的所有人員。</p> <p>在火災滅熄前禁止進入相關區域。</p> <p>The hazardous substance may be exposure when being heated over +100 ° C (+212 ° F) or disposed in fire.</p> <p>The electrolyte is flammable liquid and must be kept away from any kind of ignition source.</p> <p>If cell / battery exposed to fire, cool the accumulator outside to avoid its breaking.</p> <p>Evacuate all persons from immediate area of fire.</p> <p>Do not re-enter the area until the fire was extinguished.</p>



## 6. 洩漏處理措施Accidental Release Measures

個人預防措施 Individual Precautions	意外發生時立即疏散群眾；若電池或電池組的電解液洩漏時避免吸入氣體；若皮膚或眼睛接觸、吸入或食入，請依照在第4節中措施處理。Evacuate people immediately when the accident happens. In case of electrolyte leakage from a cell or battery, do not inhale the gas as possible. In case of skin or eye contact, inhalation or ingestion, follow the measured described in Section 4.
環境預防措施 Environmental Precautions	避免水(包括地表水和地下水)的污染；避免土地和大氣污染；保持電池內部材料遠離熱源和火源。 Avoid water (including surface water and groundwater) contamination. Avoid ground and atmosphere contamination. Keep internal materials of cell away from heat and open flame.
清理方式 Ways of Cleaning	使用防護眼鏡和手套，使用吸收材料(沙、土或蛭石)來吸收任何物質滲出。密封洩漏的電池在塑料袋中(除高溫外)及被污染的吸收材料，並根據當地法規處理廢棄的特殊廢物。 Using protective glasses and gloves, use absorbent material (sand, earth or vermiculite) to absorb any exuded material. Seal leaking battery (unless hot) and contaminated absorbent material in plastic bag and dispose of as Special Waste in accordance with local regulations.
防止二次危害發生 Prevention of Secondary Hazards	避免再次潰散，不要把搜集的材料靠近火源。 Avoid re-scattering. Do not bring the collected materials close to fire.

## 7. 搬運與儲存措施Handling and Storage

※ 在一般情況下電池組是沒有危險性的

It is not dangerous when battery pack is in normal situation.

搬運 Handling	不得震動，撞擊，擠壓，震動，穿刺，短路的電池組。 不得加熱，焊錫及投入火中。 請勿混用不同類型和品牌的產品。不要混合使用新的和使用過的產品。 請非導電（即塑料）封裝電池組。 請勿拆解，毀壞或機械濫用的產品。 Do not shock, impact, crush, vibrate, puncture, and short-circuit the battery pack. Do not be heated, solder and throw into fire. Do not mix products of different types and brands. Do not mix new and used products. Keep battery pack in non conductive (i.e. plastic) package. Do not disassemble, mutilate or mechanically abuse products.
儲存 Storage	存放於陰涼（30℃以下），乾燥，通風處。遠離潮濕，熱源，火源；高溫會導致電池洩漏和破裂。 直到使用前保持電池組在原有的包裝中，並不使其混雜。 長時間儲存時電池組電量應維持在完全充電的25%到75%之間。(最長的時間不超過六個月) Store in a cool (below 30 ° C), dry and ventilated area. Keep away moisture, sources of heat, open flame. High temperature may result in battery pack leakage and rupture. Keep battery pack in original packaging until use and do not jumble them. The battery pack should be between 25% and 75% of full charge when stored for a long period of time(The longest time is not over six months).



其他 Other	<p>關於最大電流、工作溫度範圍、最大充電和放電等狀態請依照製造商相關建議。</p> <p>對變形的電池施加壓力可能會使其解體並導致眼睛、皮膚受刺激及喉嚨發炎。</p> <p>切勿浸在水中。</p> <p>電芯和電池組並無設計外接電源充電，從非使用經由製造商核可之特定型號充電器。連接到不合適的電源可能導致火災或爆炸。</p> <p>Follow Manufacturers recommendations regarding maximum recommended currents, operating temperature range, maximum charge and discharge states.</p> <p>Applying pressure on deforming the battery may lead to disassembly followed by eye, skin and throat irritation.</p> <p>Do not immerse in water.</p> <p>The cells and batteries are not designed to be recharged from external power sources besides specific charger models approved by manufacturers. Connecting to inappropriate power supplies can result in fire or explosion.</p>
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## 8. 暴露預防及個人防護Exposure Controls / Personal Protection

工程控制Engineering Measures	
<p>在正常操作情形下是不需要工程控制。當電池的內部材料洩漏，維持電芯內部材料遠離熱源和火源，之後使此局部排氣或改善通風。</p> <p>In normal situation, engineer measures is not require. When the internal materials of cell leak, keep internal materials of cell away from heat and open flame, then operate the local exhaust or improve ventilation.</p>	
個人防護設備Personal Protective Equipment	
呼吸防護 Respiratory Protection	<p>在正常操作情形下是不需要；在發生火災的情況下需要SCBA。</p> <p>Not required during normal operations. SCBA is required in the event of a fire.</p>
搬運防護 Hand Protection	<p>在正常操作情形下是不需要；當電池組破裂時需要防護手套。</p> <p>Not required during normal operations. Protective gloves are required when battery Pack rupture.</p>
眼睛 / 臉部防護 Eye / Face Protection	<p>護目鏡或設計防止液體飛濺的防護眼鏡。</p> <p>Goggle or protective glasses designed to protect against liquid splashes.</p>
身體 / 皮膚防護 Body / Skin Protection	<p>長袖和長褲工作服。</p> <p>Working clothes with long sleeve and long trousers.</p>
足部防護 Foot Protection	<p>建議對大型集裝箱搬運時使用鋼頭鞋。</p> <p>Steel toed shoes recommended for large container handling.</p>

## 9. 物理與化學性質Physical and Chemical Properties

※ 以下項目並不適用(除非發生電池損壞使內部組件暴露或洩漏)

The following points are not applicable unless in case of leaking or damaged batteries with internal components sipping out.

外型 Appearance	固體 Solid
氣味 Odor	無味(除非產損壞導致電解液流出) Odorless (unless in case of damaged product with leaking electrolyte)
酸鹼值 pH	不適用 Not applicable
Vapor Pressure	不適用 Not applicable
蒸氣密度 Vapor Density	不適用 Not applicable
沸點 Boiling Point	不適用 Not applicable
閃點 Flash Point	不適用 Not applicable
水中溶解度 Solubility in Water	不適用(除非內部零部件暴露) Not applicable (unless inner components are exposed)
密度 Density	不適用 Not applicable





## 10. 安定性及反應性 Stability and Reactivity

安定性 Stability	在第7節所述條件下電池組是屬於安定狀態 The battery pack is stable under conditions described in Section 7.
應避免之情況 Conditions to Avoid	過熱、焚燒、衝擊、碰撞、擠壓、震動、穿刺、短路、解體和存放於潮濕的環境。 Heat, incinerate, shock, impact, crush, vibrate, puncture, short-circuit, disassemble and store in humid environment.
應避免之物質 Materials to Avoid	強無機酸、鹼性溶液、強氧化性物質和導電材料。 Strong mineral acids, alkali solutions, strong oxidising materials and conductive materials.
分解物質的危害性 Hazardous Decomposition Products	電解液會在大氣中與水反應並產生有毒物質，包括氫氟酸。電芯的熱分解可產生含 CO <sub>2</sub> 、CO、H <sub>2</sub> 、CH <sub>4</sub> 、C <sub>2</sub> H <sub>4</sub> 和C <sub>2</sub> H <sub>6</sub> 等有害或有毒的煙霧。 電芯的熱分解可產生釋放電解液液體/蒸汽、有毒物質粉塵和甲烷等。 Electrolyte may react with water in the atmosphere and produce toxic materials including fluorhydric acid. Thermal decomposition of the cells may produce of noxious or toxic fumes containing CO <sub>2</sub> , CO, H <sub>2</sub> , CH <sub>4</sub> , C <sub>2</sub> H <sub>4</sub> and C <sub>2</sub> H <sub>6</sub> . Thermal decomposition of the cell may produce releasing of electrolyte liquid / vapor, noxious materials dust and methane.

## 11. 毒性資訊 Toxicological Information

在正常的情況電池組不具有任何有害物質。如果電池洩漏或破裂，裡面的材料可能會暴露，並釋放出有毒物質或引起毒理學性質。

The battery pack does not have any hazardous substance in normal situation. If battery pack leak or rupture, the inside materials may be exposed, and release toxic substance or elicit toxicological properties.

特徵和症狀 Signs & Symptoms	腐蝕性煙霧會刺激皮膚、眼睛和粘膜。過度接觸可能會導致非纖維化肺損傷和粘膜刺激症狀。 The corrosive fumes will be very irritating to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.
吸入 Inhalation	洩漏或破裂的電池組可能會導致呼吸系統和黏膜的刺激；如果產生的氣體，可能會發生喉嚨發炎和噁心；電池組的內部材料可能引起過敏反應。 The leaked or ruptured battery pack can cause respiratory system and mucosa irritation. If gas is generated, throat irritation and nausea may occur. The inside materials of battery pack may cause an allergic reaction.
皮膚接觸 Skin Contact	電解液可能導致皮膚刺激；與鎳及其化合物接觸可能引起過敏性皮炎。 Electrolyte can cause a skin irritation. Contact with Nickel and its compounds may cause allergic dermatitis.
眼睛接觸 Eye Contact	洩漏或破裂的電池組可能導致眼睛刺激；粉塵可能導致眼瞼發炎。 The leaked or ruptured battery pack can cause eye irritation. Dust may cause inflammation of eyelids.
攝入 Ingestion	電解質攝入可能導致人體組織和呼吸道和消化系統的損害。 Electrolyte ingestion may cause damages to body tissues and to respiratory and digestive systems.
致癌性 Carcinogenetic	美國公共衛生服務部國家毒理學計劃將鎳衍生物列入可疑致癌物質列表中。 Nickel derivatives are classified in suspected carcinogenetic list by the National Toxicology Program of the US. Public Health Service.
嚴重暴露的醫理情形 Medical conditions generally aggravated by exposure	可能會出現濕疹、皮膚過敏、肺損傷、哮喘和其他呼吸系統疾病。 It may occur eczema, skin allergies, lung injuries, asthma and other respiratory disorders



**12. 生態資訊Ecological Information**

電芯內的一些材料具有生物蓄積性。在正常情況下，這些材料是被包覆而不會對人或周圍環境構成危險。請依據相關法規處置廢物，不要隨意丟棄產品。  
Some materials within the cell are bioaccumulative. Under normal conditions, these materials are contained and pose no risk to persons or the surrounding environment. Do not discard products arbitrarily. Dispose the waste product according to the relevant regulations.

**13. 廢棄處置措施Disposal Consideration**

產品(殘餘的廢棄物) Product (waste from residues)	不要扔掉使用過的電池組，請通過回收公司進行回收。 Do not throw out a used battery pack. Recycle it through the recycling company.
受污染的包裝 Contaminated packaging	不論是容器或包裝在正常使用過程中是不會被污染。當內部材料從電池組的污染物洩漏，請視同工業廢棄物做專項管理處置。 Neither a container nor packing is contaminated during normal use. When internal materials leaked from a battery pack contaminates, dispose as industrial wastes subject to special control.

**14. 運輸資訊Transport Information**

UN編號 / 物品名稱 UN No/Shipping Name	UN3480—鋰離子電池 (包含鋰聚合物電池) LITHIUM ION BATTERIES (including lithium ion polymer batteries) UN3481—鋰離子電池與設備一同包裝或與設備連結(包含鋰聚合物電池) LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries) UN3556-鋰離子電池驅動車輛 (第9類危險品，適用於純電動轎車、貨車、工程車等) VEHICLE, LITHIUM ION BATTERY POWERED
DGR分類 DGR Class	9 (UN, IATA) None (IMO, IMDG Code Special provision 188)
包裝類別 Packing Group	
包裝指南 Packing Instruction	P903 (Recommendations on the Transport of Dangerous Goods, 19th) 965 Section IA / Section IB (IATA, Dangerous Goods Regulations, 63th) 966 or 967 Section IA / Section II** (IATA, Dangerous Goods Regulations, 63th)
其他相關資訊 Other Applicable Information	在運輸的情況下，避免接觸高溫 and 防止結露的形成。運輸過程中，防止落下，摔落，潮濕即危險。請參閱第7節—搬運與儲存措施。電池依照UN3556規範安裝在自行車裝置。 In the case of transportation, avoid exposure to high temperature and prevent the formation of any condensation. During the transportation, avoid falling, dropping, wet and damage. Please refer to Section 7—Handling and Storage. The battery is fitted in the equipment Bike for UN3556

\* Section IA / Section IB / Section II

Section IA : 電池組大於100 Wh ;

Section IA : Battery pack greater than 100 Wh ;

Section IB : 電池組不大於100 Wh ;

Section IB : Battery pack equal to (or less than) 100 Wh



**\*\* Section I / Section II**

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Section I : 電池組大於100 Wh並與設備一同包裝

Section I : The equipment is packed with battery pack with a Watt-hour rating in excess of 100 Wh ; Section II : 電池組不大於100 Wh並與設備一同包裝

Section II : The equipment is packed with battery pack with a Watt-hour rating not exceeding 100 Wh. 967—

Section I : 電池組大於100 Wh並與設備做連結

Section I : The equipment is contained with battery pack with a Watt-hour rating in excess of 100 Wh ; Section II : 電池組不大於100 Wh並與設備做連結

Section II : The equipment is contained with battery pack with a Watt-hour rating not exceeding 100 Wh.

※電池組符合於UN3481中的適用要求。

該產品的相關定義如上，它是否被判別為“危險品”需視其運輸條件符合性或相關國家地區規定及運輸方式處理。

關於指示或規定，請參見第15節—法律規範資訊。

The battery pack complies with the applicable requirements in the UN3481.

The product is defined as above, it is not recognized as "DANGEROUS GOODS" or is treated as almost "Non-DANGEROUS GOODS" when its transport condition accords with instructions or provisions depend on region and transportation mode.

About the instructions or provisions, please see descriptions in Section 15—Regulatory Information.

**15. 法律規範資訊Regulatory Information**

Code of Federal Regulations (CFR) : Title 29 Labor 1910.1200 Hazard communication.

聯邦法規 (CFR) : 標題 29 勞工 1910.1200 危險通報。

Code of Federal Regulations (CFR) : Title 49 Transportation 173.185 Lithium cells and batteries.

聯邦法規 (CFR) : 標題 49 運輸 173.185 鋰電池和電池組。

United Nations (UN) : Recommendations on the Transportation of Dangerous Goods Model Regulations (19th revised edition, 2015)

聯合國 (UN) : 關於危險貨物運輸示範條例的建議 (第 19 次修訂版, 2015 年)

International Air Transport Association (IATA) : Dangerous Goods Regulations (57th edition, 2016)

國際航空運輸協會 (IATA) : 危險品條例 (第 57 版, 2016 年)

International Maritime Organization (IMO) : International Maritime Dangerous Goods (IMDG) Code is 41-22

國際海事組織 (IMO) : 國際海運危險品 (IMDG) 代碼為 41-22

Recommendations on the Transportation of Dangerous Goods Model Regulations, Manual of Tests and Criteria (5th revised edition Amendment 1, 2011)

關於危險貨物運輸示範條例的建議，測試和標準手冊 (第 5 次修訂版, 第 1 次修訂, 2011 年)

法規資料: 道路交通安全規則、危害性化學品標示及通識規則。

如果本安全資料表的其它部分沒有提供適用於此產品的法規訊息，將在這一部分進行描述。

需遵守職業安全衛生法(如:職業安全衛生設施規則，危害性化學品標示及通識規則、特定化學物質危害預防標準，勞工作業場所容許暴露標準)、毒性極關注化學物質管理法及其標示與安全資料表管理辦法、道路交通安全規則(聯合國危險貨物運輸建議書(橘皮書)、國際海運危險貨物規則)和事業廢棄物儲存清除處理方法及設施標準。

**16. 其他資訊Other Information**

此安全資料表的內容訊息是基於現有知識和現行法律所編輯。

此安全資料表提供關於產品的健康，安全和環境方面的指南，但不應被解釋為技術性能或適合特定應用的任何保證。

The information contained in this Safety data sheet is based on the present state of knowledge and current legislation.

This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

— 參考資料(Reference)—

電芯的物質安全資料表

Material Safety Data Sheet for Battery Cell

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