

## 安全資料表 Safety Data Sheet(SDS)

## 一、物品與廠商資料/Product and Company Identification

物品名稱： Battery Pack		
Product Name		
產品編號： EK.61F16.001		
Product Code		
機種名稱： ZB1758--01 43.2Wh Darfon		
Model Name: ZB1758--01 43.2Wh Darfon		
ITEM	Value	Remark
Nominal Voltage	21.6 V	
Nominal Capacity	2000 mAh	
Wh-capacity	43.2 Wh	SOC ≤ 30%
建議用途及限制使用： Model : EK.61F16.001		
Suggestion and Restriction on application. Model : EK.61F16.001		
製造商或供應商名稱、地址及電話：達方電子股份有限公司/桃園市龜山區山鶯路167號		
Address & Tel. of Manufacturer or Agent: Darfon Electronics Corp./ No.167, Shanying Rd.,		
Guishan Dist, Taoyuan City 333, Taiwan (R.O.C.)		
緊急聯絡電話/傳真電話： +886-3-2508800/+886-3-2507177		
Emergency Phone Number/Fax: +886-3-2508800/+886-3-2507177		

## 二、危害辨識資料/Hazard Identification

物品危害分類/Hazard Classification：NA
危害警告訊息/Hazard statement: 鋰電池在異常使用時可能導致熱能產生或電解液漏液。電解液為易燃物，應避免以及離開火源。Lithium batteries may cause thermal energy or electrolyte leakage during abnormal use. Should avoid and leave the fire source.
毒性/ Toxicity: 燃燒中的電池產生的水氣與煙霧，可能會對眼睛或皮膚造成刺激。Water vapor and smoke from a burning battery, may cause irritation to the eyes or skin.
危害防範措施/Precaution:
1. 請勿使電池暴露在過度的撞擊及震動情況下。Do not expose the battery to excessive shock and vibration.
2. 請勿拆卸變形電池。Do not disassemble the deformed battery
其它危害 Others: NA

## 三、成分辨識資料/Composition, Information on Ingredients

EMS TAB No. F-A, S-I
UN No.: 3480 & 3481
IMDG Class : 9
Packaging type : Carton

## 混合物質/Mixture:

成分名稱 Component Chemical Name &Common Names :	濃度(成分百分比) Concentration (Percentage) :	化學文摘社登記號碼 CAS No. :
Lithium Cobalt Oxide	20-25%	12190-79-3
Lithium Salts	1-5%	-
Nickel compound	15%	7429-90-5
Carbon(Graphite)	12%	7782-42-5
Organic electrolyte	<8%	-
Aluminum Foil	5%	-
Polycarbonate	10%	-
Tin	0.5-1%	7440-31-5
Iron	1-2 %	7439-89-6
Silver	0.05%	7440-22-4
Copper Foil	7-10%	7440-50-8
Water	1%	7732-18-5
E-Glass Fabric	0.00003%	65997-17-3
Silica	0.08%	7631-86-9
Ethylene Glycol Monobuthy Ether	0.05%	111-76-2
Aluminum oxide	0.01%	1344-28-1
Silicon dioxide	0.9%	14808-82-7
Epox y Resin	1%	29690-82-2
Chromium	0.3%	7440-47-3
Glass	0.5%	
Ruthenium(IV) oxide	0.025%	12036-10-1
Palladium on carbon	0.15%	7440-5-3
Lead(II) oxide	0.0002%	1317-36-8
Cupric Oxide	0.5%	1317-38-0
Antimony Trioxide	0.5%	1309-64-4
Manganese Oxide	0.5%	1344-43-0
Titanium-dioxide	0.01%	13463-67-7
2-Ethylanthraquinone	0.004%	84-51-5
Silicon dioxide(vitreous)	0.36%	60676-86-0
Epoxy resin	0.28%	26875-67-2
selenium oxide	0.07%	12640-89-0
Magnesium oxide	0.81%	1309-48-4
Phenol, polymer with 1,4-bis(methoxymethyl)benzene	0.0058%	26834-02-6
Iron cobalt chomite black spinel	0.01%	68186-97-0
Silicon	0.60%	7440-21-3
Magnesium	0.15%	7739-95-4

Gold	0.01%	7440-57-5
1,4-Butanediol diglycidyl ether	0.00073%	2425-79-8
Aryl Amine	0.017%	-
Phenol Resin	0.05%	-
Carbon Black	0.3%	1333-86-4
Zn	0.26%	7440-66-6
Curing agent & hardner	0.001%	-
Octamethyltrisiloxane	0.001%	107-51-7
Toluene	0.001%	108-88-3

#### 四、急救措施/ First Aid Measures

##### 不同暴露途徑之急救方法/ First Aid Measures for Different Kinds of Exposures :

- 1.吸入/Inhalation：移動至空曠的地方。Remove from exposure.
- 2.眼睛接觸/Eye contact: 用流水連續沖洗至少 15 分鐘。如果刺激持續，就醫。Flush continuously with running water for at least 15 minutes. Get medical attention if you continue to stimulate.
- 3.皮膚接觸/Skin contact: 脫掉污染的衣服並用水沖洗皮膚。Remove contaminated clothing and flush skin with running water.
- 3.吸入/ inhalation: 從發生源離開。Remove from exposure.
- 4.食入/Ingestion：不要催吐,給傷者喝水並就醫。Do not induce vomiting. Give victim water to drink and seek medical attention.

#### 五、滅火措施/ Fire Fighting Measures

##### 適用滅火劑/Suitable Extinguishing Media :

使用適當的滅火劑(乾粉滅火器或泡沫滅火器) Use suitable extinguishing media.  
(dry-chemical extinguisher or foam fire extinguisher)

##### 消防人員之特殊防護設備/Required Special Protective Equipment for Fire-Fighters :

使用 NIOSH/MSHA 認可全臉自給式呼吸裝置及全套防護設備。Fire fighting Equipment :  
Use NIOSH/MSHA approved full-face self-contained breathing apparatus(SCBA) with full protective gear.

#### 六、洩漏處理方法/ Accidental Release Measures

個人應注意事項/ Personal Precautions: 配戴安全護目鏡及防護手套。Wear safety goggles and protective gloves.

##### 環境注意事項/Environmental Precautions :

將材料至於適當容器並通知消防部/公安/警察以及遠離火源。Place material into suitable containers and call local fire/police department and keep fire away.

#### 七、安全處置與儲存方法/ Handling and Storage

##### 處置/Handling :

1. 勿使電池暴露在過度的撞擊及震動情況下。Do not expose the battery to excessive shock and vibration.
2. 意外短路幾秒不會嚴重影響電池,長時間短路會使電池迅速失去能量,可產生足夠熱量灼燒皮膚,短路來源包含:混亂的電池散裝容器,硬幣,金屬飾品。Short-circuiting should be avoided. However, accidental short-circuiting for a few seconds will not seriously affect the

battery. Prolonged short circuits will cause the battery to rapidly lose energy, could generate enough heat to burn skin. Sources of short circuits include jumbled batteries in bulk containers, coins, metal jewelry, metal covered tables.

3. 為了減少短路風險,上述電池運送及使用,需提供保護殼覆蓋,不要拆卸變形電池,如果電池已經破裂,不允許與水接觸。To minimize risk of short-circuiting, the protective case supplied with the battery should be used to cover the terminals when transporting or storing the battery. Do not disassemble or deform the battery.

## 儲存/ Storage :

1. 鋰電池應存儲於陰涼、乾燥、通風良好處,高溫超過 100 度,將導致電池性能損耗、漏電及生鏽,不要將電池曝露於明火。Lithium batteries should be stored in a cool, dry, well-ventilated place, And temperature above 100 degree can result in loss of battery performance, leakage, or rust. Do not expose the battery to open flames.
2. 最佳的運輸儲存溫度為 20~25 度。The best temperature in transport is 20~25°

## 八、暴露預防措施/ Exposure Controls, Personal Protection

工程控制/ Engineering Measures : 避免吸入。在有吸入危險的通風良好的地方使用,建議機械抽氣。保持蒸氣含量低於建議的暴露標準。Avoid inhalation. Use in well ventilated areas, where an inhalation risk exists, mechanical extraction ventilation is recommended. Maintain vapour levels below the recommended exposure standard.

## 個人防護設備/ Personal Protection Equipment :

- 呼吸防護/Respiration : 正常期間不需保護,火災時需裝備 SCBA。Not required during normal operations. SCBA required in the event of a fire.
- 手部防護/Hand : NA
- 眼睛防護/Eye : 在安全規範下不需要防護。Not required beyond safety practices of employer.
- 皮膚及身體防護/Skin & Body : 在安全規範下不需要防護。Not required beyond safety practices of employer.

## 衛生措施/Hygiene Measures :

## 九、物理及化學性質/ Physical and Chemical Properties

物質狀態/ State of Substance : Insoluble	形狀/Appearance : solid
pH 值/pH Value : NA	沸點/沸點範圍/Boiling Point : NA
熔點/凝固點 Melting /Solidify Point:NA	揮發速率/Evaporative Speed:NA
分解溫度/Decomposing Temperature : NA	閃火點 : °F °C Flashpoint
密度/Density : NA	溶解度/Dissolution : Insoluble
分配係數/Distribution factor:NA	

## 十、安定性及反應性/Stability and Reactivity

安定性/反應 Reactivity & Stability : 電池外部短路,擠壓造成的變形,或高溫曝曬(超過 100 度)產生的燃燒及熱。Battery external short circuit and deformation caused by extrusion, or burning and heat generated by high temperature exposure (over 100 degrees).

應避免之狀況/Conditions to Avoid : 應避免的條件:避免接觸高溫、明火,不要刺穿、擠壓及焚燒 Avoid : Avoid exposure to heat and open flame. Do not puncture, crush or incinerate.

危害分解物/Hazardous Decomposition Products : NA

## 十一、毒性資料/ Toxicological Information

本產品在正常操作及使用下,不會引起毒物反應。 This product does not elicit toxicological properties during routine handling and use.

## 十二、生態資料/ Ecological information

生態毒性 Aquatic and Terrestrial Ecotoxicity : NA

持久性及降解性 Persistence and Degradability : NA

生物蓄積性 Bioaccumulative : NA

土壤中之流動性及其他不良效應 Mobility in Soil : NA

鋰電池子電池組按照聯邦、洲及地方法規進行處理。 Lithium ion battery pack can be disposable in accordance with appropriate federal, state and local regulations.

## 十三、廢棄處置方法/Disposal considerations

廢棄處置方法/Disposal Methods :

1. 不能扔掉用過的電池,需透過回收公司回收。 Do not throw out a used battery cell. Recycle it through the recycling company.
2. 電池廢棄時請將正極與負極兩端絕緣,以免端子相互接觸。 When the battery is discarded, please insulate the positive and negative level to avoid contact between the terminals.
3. 請依據可對應之聯邦、州以及地方法規進行處理 Please follow the applicable federal, state, and local regulations

## 十四、運送資料/Transport information

國際運送規定/International Transportation Regulations :

1. 國際航空運輸協會 (IATA)危險品規則(第 61 版)。 International Air Transport Association (IATA) Dangerous Goods Regulations (61th Edition).
2. 包裝說明 965/966/967 鋰離子電池 SectionIA 。 SectionIA of Packing Instruction 965/966/967 section for lithium ion battery.
3. IATA UN3480(鋰離子電池)及 UN3481(鋰離子電池及設備)。 IATA UN 3480 (Li-ion Batteries) and UN3481 (Li-ion Batteries with equipment)
4. 美國運輸部(DOT)49 聯邦法規(美國)US。 Department of Transportation (DOT) 49 code of Federal Regulations [USA]
5. 國際民用航空組織(ICAO)技術指南(2017-2018 版)。 International Civil Aviation Organization (ICAO) Technical Instructions (2017-2018 Edition)
6. 國際海運危險貨物(IMDG)代碼 39-18(2018 版)特別規定 188,230,310&957 for UN3480/3481),海洋運輸危險貨物第 9 類,列表中特別規定及例外,以及手冊中的測試標準(第 3 部分,分節 38.3) 。 The International Maritime Dangerous Goods(IMDG) Code 39-18(Edition 2018),Special Provisions 188,230,310&957 for UN3480/3481) Transport Regulations for Sea Transport IMDG Code of Class 9 exemptions . List, Special Provisions and Exceptions"), and the Manual of Tests and Criteria (Part 3, Sub-section 38.3).

特殊運送方法及注意事項/Special Transportation Methods and Precautions :  
避免高溫及結露。 Avoid high temperatures and condensation。

#### 十五、法規資料/Regulatory information

適用法規/Applicable Regulation :

1. 國際海運危險品準則 2018 版。 The International Maritime Dangerous Goods(IMDG)-Edition 2018
2. 國際民用航空組織(ICAO)技術指南(2017-2018 版)International Civil Aviation Organization (ICAO) Technical Instructions (2017-2018 Edition)
3. 國際航空運輸協會 (IATA)危險品規則(第 61 版) International Air Transport Association (IATA) Dangerous Goods Regulations (61th Edition).

#### 十六、其他資料/Other information

參考文獻 Ref. Document	NA		
製表單位 Department	名稱/Dept. Name： DGQ0		
	地址/電話 Address/Tel.：03-250-8800		
製表人 Made By	職稱/Title： QA Engineer	姓名	
		Name	May Huang
製表日期 Date Prepared	2020/10/16		