



Lithium Battery Safety Document – Section II or Section IB Shipments

AWB or Tracking Number: SEE BILL OF LADING (BOL) FOR TRACKING INFORMATION

This document may be used to comply with the additional documentation requirements of the IATA DGR.

WARNING: LITHIUM BATTERIES THAT HAVE BEEN RECALLED BY THE MANUFACTURER FOR SAFETY REASONS **MUST NOT** BE SHIPPED BY AIR.

Terminology:

- Cell – *electrochemical unit, consisting of an anode and a cathode, capable of generating electrical current*
- Battery – *assembly of cells*
- Lithium ion cells/batteries – *generally rechargeable – includes lithium polymer cells/batteries*
- Lithium metal cells/batteries – *non-rechargeable*

This shipment contains lithium cells or batteries in the following configuration (check applicable description):

Lithium Ion - Maximum of • 20 Watt-hours per cell or • 100 Watt-hours per battery	Lithium Metal – Maximum of • 1 gram of lithium metal per cell or • 2 grams of lithium metal per battery
☐ Cells or batteries <u>only</u> (Lithium ion batteries in compliance with Section II of PI 965, UN 3480) - Cells or batteries in a package, without electronic equipment: Package Limit: ≤2.7 Wh = 2.5 kg; <u>or</u> >2.7 Wh but ≤ 20 Wh = 8 cells; <u>or</u> >2.7 Wh but ≤ 100 Wh = 2 batteries	☐ Cells or batteries <u>only</u> (Lithium metal batteries in compliance with Section II of PI 968, UN 3090) - Cells or batteries in a package, without electronic equipment. Package Limit: ≤0.3 g = 2.5 kg; <u>or</u> >0.3 g but ≤ 1 g = 8 cells; <u>or</u> >0.3 g but ≤ 2g = 2 batteries
☐ Cells or batteries <u>only</u> (Lithium ion batteries in compliance with Section IB of PI 965, UN 3480) - Cells or batteries in a package, without electronic equipment <i>Packages must be limited to 10 kg net weight of batteries.</i>	☐ Cells or batteries <u>only</u> (Lithium metal batteries in compliance with Section IB of PI 968, UN 3090) - Cells or batteries in a package, without electronic equipment <i>Packages must be limited to 2.5 kg net weight of batteries..</i>
☐ Packed <u>with equipment</u> (Lithium ion batteries in compliance with Section II of PI 966, UN 3481) - Cells or batteries contained in a package with associated electronic equipment. <i>Packages must be limited to 5 kg net weight of batteries.</i>	☐ Packed <u>with equipment</u> (Lithium metal batteries in compliance with Section II of PI 969, UN 3091) - Cells or batteries contained in a package with associated battery-powered equipment – with the batteries not installed in the equipment. <i>Packages must be limited to 5 kg net weight of batteries.</i>
☒ Contained <u>in equipment</u> (Lithium ion batteries in compliance with Section II of PI 967, UN 3481) - Cells or batteries installed in equipment. <i>Packages must be limited to 5 kg net weight of batteries.</i>	☐ Contained <u>in equipment</u> (Lithium metal batteries in compliance with Section II of PI 970, UN 3091) - Cells or batteries installed in equipment. <i>Packages must be limited to 5 kg net weight of batteries.</i>

- This package must be handled with care. A flammability hazard exists if the package is damaged.
- If this package is damaged in transportation, it must not be loaded until the condition of the contents can be verified. The batteries contained in this package must be inspected for damage and may only be repacked if they are intact and protected against short circuits.
- For more information about the batteries contained in this package, call the following telephone number:

CHEMTREC for Lithium Battery Information Number:

For EMERGENCY information call 800-424-9300 or outside the United States call 703-527-3887



210-06676+A1

	Document Name: 5825.001 Safety Data Sheet	Rev. 01
	Page 1 of 7	

File Number: SDS_5824.001_R01

Date: 2020-Dec-8

SAFETY DATA SHEET

Section 1 -- Product and Company Identification

PRODUCT IDENTIFICATION

Product Name: Rechargeable Lithium Ion Battery

Product Model No.: 271-00046

Inventus Part No.: 03-55825-001

COMPANY NAME:

Inventus Power, Inc.

1200 Internationale Parkway, Woodridge IL 60517

Emergency telephone number:

Inside the US: 1-800-535-5053

Outside the US: 001-352-323-3500

MANUFACTURING SITE:

Name: ICC Electronics (Dongguan) Ltd.

Address1: No.23, Shang Yuan Road, QingXi Town, Dongguan City, Guangdong Province, China

Telephone number: +86 769 87731085

Emergency telephone number: +86 769 87731085



210-06819+B0

	Document Name: 5825.001 Safety Data Sheet	Rev. 01
	Page 2 of 7	

Section 2 -- Composition / Information on Ingredients

Battery Product Matrix

Inventus Power P/N	Customer P/N	Pack Configuration	Pack Nominal Voltage V	Pack Nominal Capacity (Ah)	Pack Energy (Wh)
03-55825-001	271-00046	2S2P	7.2	3.6	25.92

Chemical Composition:

Component	Material	Formula	CAS Number	Percentage range (wt %)
Positive Electrode	Lithium Nickel Cobalt manganese Oxide	LiNiMnCoO ₂	182442-95-1	25~33%
Negative Electrode	Graphite	C	7782-42-5	15~25%
Electrolyte	Polyvinylidene Fluoride	C ₂ H ₂ F ₂	24937-79-9	0.5~1%
	Lithium hexafluorophosphate	LiPF ₆	21324-40-3	15-27%
Outer case	Aluminium	Al	7429-90-5	5%
	Copper	Cu	7440-50-8	5%
	Iron	Fe	7439-89-6	5%

	Document Name: 5825.001 Safety Data Sheet	Rev. 01
	Page 3 of 7	

Section 3 -- Hazards Identification

Under normal usage, there is no contact with electrolyte and no hazard exists. If exposed to high temperature or fire, cell may leak electrolyte and in extreme cases explode. The vented gas may contain among others Hydrogen Fluoride.

Section 4 -- First Aid

Under normal operating condition, contents of the cells are in sealed (polymer pouch/metal can or cylinder) condition and pose no threat to the user. Exposure to the cell internal content happens under abusive conditions.

Inhalation: Contents of open battery may cause respiratory irritation. Move to fresh air immediately and seek medical attention.

Skin: Contents of open battery may cause skin irritation. Wash skin with copious amount of soap and water.

Eye: Contents of open battery may cause eye irritation. Flush eyes immediately with water for at least 15 minutes and seek medical attention.

Ingestion: Seek medical attention immediately. Induce vomiting.

Section 5 -- Fire Fighting

In case of Fire use CO2 or CLASS D fire extinguisher

In case battery burns with other combustible, use corresponding fire extinguisher. Corrosive fumes may be present during fire. Use protective equipment (gloves, breathing apparatus, goggles etc.)

Gases from the burning fire will include Hydrogen Fluoride, Carbon oxides, Hydrocarbons among others.

Section 6 -- Accidental Release

Battery material is enclosed in either metal casing or in laminate and does not release easily under normal usage. Under abuse condition such as puncture, high heat exposure, electrical abuse electrolyte containing vinyl chloride salt in organic solvent may leak out. See section 4 for first aid measure. Seek medical attention.

Section 7 -- Instructions on Safe Handling and Use

Storage: Store within the recommended temperature limit of the battery (read instruction manual for specific limits). Do not expose to high temperature (60°C/140°F). Avoid short circuit of the battery. Short circuit of the battery may cause release of gas and may pose burn hazard.

Handling: Do not disassemble, crush or otherwise abuse the battery. Do not open the battery.

Charge: Charge only with dedicated/specific chargers designed for this battery

Discharge: Discharge within the temperature limits of the battery detailed in the specification.

Disposal: Dispose/Recycle according to the applicable municipal, state and federal regulations. Do not dispose in household or commercial waste bin.

Caution: This battery when abused may pose fire, explosion and severe burn hazard. Handle with caution.

Section 8 -- Exposure Control and Special Protection Information

• Control parameters

Common chemical name / General name	ACGIH (2009)	
	TLV-TWA	BEI
Lithium transition metal oxidate	0.02mg/m ³ (as cobalt) * 0.2mg/m ³ (as manganese) * 0.2 mg/m ³ (as nickel) *	-
Aluminum	10mg/m ³ (metal coarse particulate) 5mg/m ³ (flammable powder) 5mg/m ³ (weld fume)	-
Carbon (Natural graphite) (Artificial graphite)	2mg/m ³ (inhalant coarse particulate)	-
Copper	0.2mg/m ³ (fume) 1.0mg/m ³ (a coarse particulate, Mist)	-
Organic electrolyte	-	-

ACGIH: American Conference of Governmental Industrial Hygienists, Inc.

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

BEI: Biological Exposure Indices

Eye Protection, gloves, ventilation, are not needed under normal usage

Use safety goggles, acid resistant safety gloves, air mask if exposed to internal content of the cell/battery.

	Document Name: 5825.001 Safety Data Sheet	Rev. 01
	Page 5 of 7	

Section 9 -- Physical and Chemical Properties

Appearance: Solid
 Form Factor: Mostly cylindrical
 Odor: N/A
 PH: N/A
 Flash Point: N/A
 Density: N/A
 Solubility: Insoluble in Water

Section 10 -- Stability and Reactivity

Not reactive under normal condition of usage.
 Note safe handling procedure.
 Avoid high temperature and mechanical abuse.
 Read label and manufacturer instruction before usage.

Section 11 -- Toxicological Effect

Acute Toxicity:
 Not known for Lithium Cobaltate, Aluminum, and Graphite.
 Copper causes gastrointestinal disturbance in 60-100mg sized coarse particulate. TDLo-Rabbit 375mg/kg
 Organic electrolyte LD50, oral - -Rat 2000mg/kg or more
 Local Effects:
 Not known for Lithium Cobaltate, Graphite and Organic Electrolyte.
 Aluminum has no known local effects.
 Copper in coarse particulate is eye irritant
 No known carcinogen in this product.

Section 12 -- Ecological Information

Battery is not biodegradable. Do not dispose in landfill. Please follow local regulations regarding recycle and disposal.

	Document Name: 5825.001 Safety Data Sheet	Rev. 01
	Page 6 of 7	

Section 13 -- Disposal Information

Dispose/Recycle according to the applicable municipal, state and federal regulations. Do not dispose in household or commercial waste bin.

Section 14 -- Transportation Information

Proper Shipping Name: Lithium Ion Batteries.

The UN number for the battery pack is UN3480, and it also can be UN3481 when the battery pack contained in the equipment or packed with the equipment.

The battery meets the requirements of the test in the United Nations (UN) Manual of Tests and Criteria, Part III, sub-section 38.3

DOT: Refer to Attachment ERG 2020 guide 147 (Lithium Ion battery Guide)

IMDG: Refer to IMDG/Ocean Transport ENS F-A, S-I

IATA: Refer to IATA-ICAO/Air Transport ERG CODE 12FZ

When large amount of batteries is transported by ship, vehicle and railroad, avoid high temperature and dew condensation.

Avoid transportation which may cause damage of package.

	Document Name: 5825.001 Safety Data Sheet	Rev. 01
	Page 7 of 7	

Section 15 -- Regulatory Information

The transport of rechargeable lithium-ion batteries is regulated by various bodies, (IATA, IMO, US-DOT)

That follow the United Nations "Recommendations on the Transport of Dangerous Goods.

Regulations specifically applicable to the product:

ICAO 2021/2022 Edition of ICAO Technical Instructions for the Safety Transport of Dangerous Goods by Air

IMO IMDG Amendment 39-18 2018 Edition. And the battery pack complies with the special provision 188 of the IMDG CODE.

IATA 62nd Edition (2021) of the IATA Dangerous Goods Regulations (DGR)

US Department of Transportation DOT (49 CFR 100-185), (USA)

OSHA hazard communication standard (29 CFR 1910.1200)

Hazardous

V Non-Hazardous

This battery meets the requirements of Packing Instructions 965, section II or section IB of the IATA regulation.

Section 16 -- Other Information

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.



UN38.3 试验概要

UN38.3 Test Summary



811900700046446

单位信息 Company information

委托单位 Consignor	辉碧电子(东莞)有限公司广州分公司 Inventus Power, Inc.- Technical Center 广州市番禺区南村镇兴业路 921 号长华大厦西五楼 5th Floor Western, Changhua Building No.921 Xingye Road, Nancun Town, Panyu, Guangzhou City, Guangdong 511442, P.R.China 02039298880 andy.quan@inventuspower.com www.inventuspower.com
生产单位 Manufacturer	辉碧电子(东莞)有限公司 ICC Electronics (Dongguan) Ltd. 广东省东莞市清溪镇上元路 23 号 No.23,Shang Yuan Road, Qing Xi Town, Dong Guan City, Guangdong P.R. China 13650265396 andy.quan@inventuspower.com www.inventuspower.com
测试单位 Test lab	辉碧电子(东莞)有限公司广州分公司 Inventus Power, Inc.- Technical Center 广州市番禺区南村镇兴业路 921 号长华大厦西五楼 5th Floor Western, Changhua Building No.921 Xingye Road, Nancun Town, Panyu, Guangzhou City, Guangdong 511442, P.R.China 02039298880-6808 andy.quan@inventuspower.com www.inventuspower.com

电池信息 Battery information

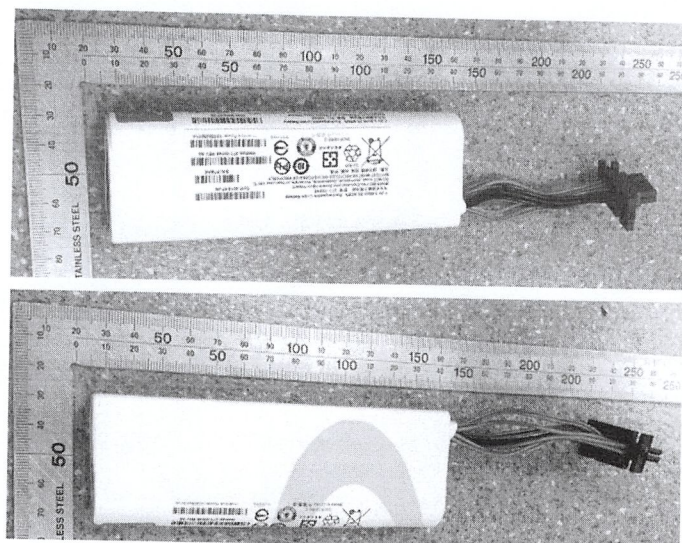
名称 Name	可充式锂离子电池组 Rechargeable Li-ion Battery	品牌 Brand	/
型号 Type	271-00046	原始测试型号 Original tested type	/
标称电压(V) Nominal voltage	7.2	容量/能量 Capacity/energy	3.6Ah/25.92Wh
描述 Description	可充电锂离子电池组 Rechargeable Li-ion battery	锂含量(g) Li content	/
质量(kg) Mass	0.216	外观 Appearance	白色塑料薄膜外壳 White plastic film shell

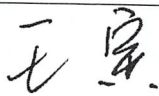
测试信息 Test information

原报告编号 Original test report No.	TR-DCAL-10-5825	测试报告日期 Date of test report	2019-08-27
测试标准 Test standard	联合国《关于危险货物运输的建议书 试验和标准手册》第38.3章 UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria 38.3 ST/SG/AC.10/11/Rev.6		
T.1 高度模拟 Altitude simulation	合格 Passed	T.2 温度测试 Thermal test	合格 Passed
T.3 振动测试 Vibration	合格 Passed	T.4 冲击测试 Shock	合格 Passed
T.5 外部短路 External short circuit	合格 Passed	T.6 撞击 Impact	合格 Passed
T.7 过度充电 Overcharge	合格 Passed	T.8 强制放电 Forced discharge	合格 Passed
38.3.3 (f)	/	38.3.3 (g)	/



样品图片 Sample Picture



结论 Conclusion	测试样品符合联合国《关于危险货物运输的建议书试验和标准手册》ST/SG/AC.10/11/Rev.6 38.3 标准要求。The tested samples meet the requirements of test items of the UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Tests and Criteria ST/SG/AC.10/11/Rev.6 38.3		
备注 Remark	/		
签名 Signature 职务 Title	 王寅 副总工程师 Vice chief engineer	签发日期 Issued date 2019-12-24	

-验证码:863671-

报告结束