Section 1 -- Product and Company Identification

Product Name: Rechargeable Lithium Ion Battery

Product Model No: 084952

Inventus Part No: 9027

COMPANY NAME:

Inventus Power, Inc.

1200 Internationale Parkway, Woodridge IL 60517

EMERGENCY TELEPHONE NUMBER:

Inside the US: 1-800-424-9300
Outside the US: 1-703-527-3887

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

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)
9027	/	3S1P	10.89	4.6	50.09

Battery Chemical Composition:

Component	Material	Formula	CAS Number	Percentage range (wt %)
Positive Electrode	Lithium Nickel Cobalt manganese Oxide	LiNiMnCoO2	182442-95-1	25~33%
Negative Electrode	Graphite	C	7440-44-0	15~25%
Electrolyte	Ethylene Carbonate	$C_3H_4O_3$	96-49-1	2~5%
	Diethyl Carbonate	$C_5H_{10}O_3$	105-58-8	2~5%
	Lithium Hexaflurophosphate	$LiPF_6$	21324-40-3	15-22%
Outer case	Aluminium	Al	7429-90-5	5%
	Cupper	Cu	7440-50-8	5%
	Iron	Fe	7439-89-6	5%

Section 3-- Hazards Identification

Under normal usage, there is no contact with electrolyte and no hazard exists. Abusive conditions such as crush, severe drop, puncture etc. must be avoided as that can lead to fire and explosion of the battery.
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.
The information in this section relates to unusual conditions resulting from abuse in which the battery electrodes and electrolytes are exposed.
Most severe hazard present in case of fire. Fire can cause explosion, exposure to toxic fume/Vapor

i. GHS Classification

Skin irritation	(Category 2)
Skin sensitization	(Category 1)
Eye irritation	(Category 2)
Single target organ, toxicity, single exposure	(Category 3)
Carcinogen	(Category 1B)

ii. GHS Label elements, including precautionary statements

Pictograms



Signal word Danger/Warning

iii. Hazard statements

H315 Causes skin irritation in case of breach of battery casing
H317 May cause an allergic skin reaction
H319 Causes serious eye irritation in case of leak or spill of electrolyte, again under abuse conditions
H335 May cause respiratory irritation when exposed to fumes from fire, but not under normal usage conditions
R10 Flammable

iv. Precautionary statements

P280 Wear protective gloves/protective clothing/eye protection / face protection.
P312 Call a POISON CENTER or doctor/ physician if exposed to fumes or electrolyte
P313 Get Medical Attention
P302 + P350 IF ON SKIN: Gently wash with plenty of soap and water.
P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

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 ABC 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.

Contain the spillage with sand or vermiculite and if necessary bunding.
Do not dispose of spillage waste into regular waste stream.

Section 7 -- Instructions on Safe Handing 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:
Components with workplace controls:

Graphite CAS 7782-42-5	TWA	2.5 mg/m3	USA, NIOSH recommended exposure limits
		5 mg/m3	USA, OSHA limits for air contaminants
		5 mg/m3	USA, OSHA occupational exposure limits
		3 mg/m3	Australian workplace exposure standards for airborne contaminants
	TWA	2 mg/m3	Canada, British Columbia OEL
			Canada, Alberta OEL
	TWAEV	5 mg/m3	Canada, Quebec OELs
Lithium CAS 21324-40-3 hexafluorophosphate	TWA	2.5 mg/m3	USA, OSHA limits for air contaminants
			USA, OSHA occupational exposure limits
	TLV	2.5 mg/m3	USA, ACGIH Threshold Limit Value
	TWA	2.5 mg/m3	Australian workplace exposure standards for airborne contaminants
	TWA	2.5 mg/m3	Canada, British Columbia OEL Canada, Alb. OEL
	TWAEV	2.5 mg/m3	Canada, Quebec OELs

Engineering Controls:
Have eye bath available.
Use non-sparking tools.
Protective Equipment: Wear chemical-resistant gloves and chemical safety goggles.
Hygiene: Follow good industrial hygiene procedures. Keep away from food, beverages.
Use safety precautions for handling high voltage, high wattage battery.
Use safety goggles, acid resistant safety gloves, air mask if exposed to internal content of the cell/battery.

Section 9 -- Physical and Chemical Properties

Appearance: Solid
Form Factor: Mostly rectangular
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, high humidity and mechanical abuse, short circuit, and sparks
Read label and manufacturer instruction before usage and disposal

Section 11 -- Toxicological Effect

Acute Toxicity:
Not known for Lithium Cobaltate, Aluminum, and Graphite or Lithium Iron Phosphate.
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 or Lithium Phosphate.
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.
No data available on aquatic toxicity, Bio accumulative potential, Mobility in soil.

Section 13 -- Disposal Information

Dispose/Recycle according to the applicable municipal, state, and federal regulations. Do not dispose in household or commercial waste bin or stream. Battery label contains Eu Battery directive compliant marking. Follow local and federal regulations for disposal and recycle of lithium-ion batteries.

Section 14 -- Transportation Information

Proper Shipping Name: Lithium-Ion Battery
Lithium-ion batteries are hazardous material/ dangerous goods per US and international transportation authority (IATA, USDOT, IMDG, ADR etc.)
This battery is 50.09Wh and is shipped as fully regulated class 9 hazardous material/dangerous goods.
UN number for the battery pack is UN3480.
UN number is UN3481 when the battery pack is contained in the equipment or packed with the equipment.
This battery meets the requirements of the test in the United Nations (UN) Manual of Tests and Criteria, Part III, sub-section 38.3
DOT: 49CFR 173.185
IMDG: Refer to IMDG/Ocean Transport ENS F-A, S-I
IATA: Refer to IATA-ICAO/Air Transport ERG CODE 12FZ
Avoid transportation which may cause damage of package. Keep in original packaging. Do not transport damaged containers.

Section 15 -- Regulatory Information

This product is considered an article under the chemical inventories listed below and consequently is exempt from listing on these inventories:
-US EPA Toxic Substance Control Act (TSCA)
-European Inventory of Existing Chemical Substances (EINECS/ELINCS)
-Other International Regulations

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 2023/2024 Edition of ICAO Technical Instructions for the Safety Transport of Dangerous Goods by Air
IMO IMDG Amendment 40-20 2020 Edition. battery pack complies with the special provision 188 of the IMDG CODE.
IATA 64th Edition (2023) 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)
This battery is shipped as fully regulated class 9 hazardous material, Packing Instruction PI965, IB for Packs ≤100Wh
This battery is shipped as fully regulated class 9 hazardous material (classified as small battery per USDOT 49CFR)
Batteries shipped with or contained in equipment must follow IATA Packing Instruction 966, Section II or PI967, Section II based on battery capacity
Shipment must accompany dangerous goods shipping paper.
Employees handling lithium-ion batteries must receive dangerous goods/hazmat training.

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 applications.
Although the electrolyte contains chemicals that by itself can cause harm, it is not present in an amount or form to cause splash.