This SDS is applicable to Tektronix TPSBAT (PN 146015001) which is also packed with the following instruments: TPS2012B, TPS2014B, and TPS2024B

File Number: SDS_ L09L40613_SH_R01
Date: 2017-3-7

SAFETY DATA SHEET

Section 1 -- Product and Company Identification

PRODUCT IDENTIFICATION

Product Name: Lithium-ion Battery

Product Model No.: SM204

COMPANY NAME:

Inventus Power, Inc.

1200 Internationale Parkway, Woodridge IL 60517

Telephone number: 630-410-7900

Fax number: 630-410-7990

Emergency telephone number: [Weekday] 630-410-7900

MANUFACTURER:

Lion Battery System (Shanghai) Ltd.

1-2F, Building 10, 5116 Yuanjiang Road, Shanghai, 201109, China

Telephone number: +86 21 3357 9999

Section 2 -- Composition / Information on Ingredients

Lithium-Ion Single Cell Matrix

Manufacturer of Cell	Cell Model	Type (lithium Ion or polymer)	Capacity (Ah))	Lithium Content (gm)	Cd/Hg/Pb (Yes/No)
Sanyo	URI8650F	Li Ion	2.3	0.69	No

Battery Product Matrix

Inventus Power P/N	Customer P/N	Pack Configuration	Pack Nominal Voltage V	Pack Nominal Capacity (Ah)	Pack Energy (Wh)
L09L40613	SM204	3S3P	11.1	6.6	69.9

Chemical Composition:

Component	Material	Formula	CAS Number	Percentage range
Positive Electrode	Lithium Cobaltate	Li-Mn-CoO_2	12190-79-3	
Negative Electrode	Graphite	C	7440-44-0 7782-42-5	
Electrolyte	Organic Carbonate – Solvent	$C_3H_4O_3$ or similar		
	Lithium Hexaflurophosphate – Salt	$LiPF_6$		
Copper		Cu	7440-50-8	
Iron		Fe	7439-89-6	
Aluminum		Al	7429-90-5	
Plastic/Electronics				

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 CO_2 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 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 ^{o}C/140 ^{o}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 (inflammable 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.

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.

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

Battery Pack

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 2012 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 9F

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.

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 2017/2018 Edition of ICAO Technical Instructions for the Safety Transport of Dangerous Goods by Air

IMO IMDG Amendment 37-14 2014 Edition. And the battery pack complies with the special provision 188 of the IMDG CODE.

IATA 58th Edition (2017) 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

The battery meets the requirements of Packing Instructions 965,

Section II and 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.

Attachment(s)

ERG 2012 Guide 147 (Lithium Ion battery Guide)

GUIDE 147 LITHIUM ION BATTERIES ERG2012

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- Lithium ion batteries contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (> 150 °C (302 °F)), when damaged or abused (e.g., mechanical damage or electrical overcharging).
- May burn rapidly with flare-burning effect.
- May ignite other batteries in close proximity.

HEALTH

- Contact with battery electrolyte may be irritating to skin, eyes and mucous membranes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Burning batteries may produce toxic hydrogen fluoride gas (see GUIDE 125).
- Fumes may cause dizziness or suffocation.

PUBLIC SAFETY

- **CALL Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.
- Ventilate closed spaces before entering.

PROTECTIVE CLOTHING

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing will only provide limited protection.

EVACUATION

Large Spill

- Consider initial downwind evacuation for at least 100 meters (330 feet).

Fire

- If rail car or trailer is involved in a fire, ISOLATE for 500 meters (1/3 mile) in all directions; also initiate evacuation including emergency responders for 500 meters (1/3 mile) in all directions.

Page 232

ERG2012 LITHIUM ION BATTERIES GUIDE 147

EMERGENCY RESPONSE

FIRE

Small Fire

- Dry chemical, CO_2, water spray or regular foam.

Large Fire

- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

SPILL OR LEAK

- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Do not touch or walk through spilled material.
- Absorb with earth, sand or other non-combustible material.
- Leaking batteries and contaminated absorbent material should be placed in metal containers.

FIRST AID

- Move victim to fresh air.
- Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.