



MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI, Canadian WHMIS Standards, European Directives, Australian NOHSC Standards, SPRING Singapore and Asian Standards

PART I *What is the material and what do I need to know in an emergency?*

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

PRODUCT IDENTIFIER

<u>TRADE NAME (AS LABELED):</u>	LITHIUM ION BATTERY PACK BMP21-PLUS-BATT
<u>CHEMICAL NAME/CLASS:</u>	Lithium Cobalt Dioxide Chemistry
<u>SYNONYMS:</u>	Lithium Ion Cells
<u>PRODUCT USE:</u>	Label Printer Battery Pack
<u>UN NUMBER:</u>	See Section 14 for Shipping Information
<u>HAZCHEM CODE (Australia):</u>	4W

SUPPLIER OF THE SAFETY DATA SHEET

<u>U.S. SUPPLIER/MANUFACTURER'S NAME:</u>	Brady Worldwide
<u>ADDRESS:</u>	6555 West Good Hope Road Milwaukee, WI 53223 USA (414) 358-6600 [8 am to 5 pm CT] Infotrac: 1-800-535-5053 (U.S. and Canada) [24 hours]
<u>BUSINESS PHONE:</u>	
<u>EMERGENCY PHONE:</u>	

EUROPEAN SUPPLIER/ DISTRIBUTOR'S NAME:

<u>ADDRESS:</u>	WH Brady NV Lindestraat 20 Industriepark C3 B - 9240 ZELE BELGIUM 0032/(0)52.45.79.05 [9 am to 5 pm]
<u>BUSINESS PHONE:</u>	
<u>EMAIL:</u>	REACH_Americas@bradycorp.com
<u>DATE OF PREPARATION:</u>	January 20, 2014

This product has been classified in accordance with the hazard criteria of the CPR. All WHMIS (Controlled Products Regulations), European Union [Regulation (EC) 1907/2006 Annex II], Australian [NOHSC:2011 (2003)], Singapore SPRING and Japanese Industrial Standard (JIS Z 7250: 2000) required information is included. It is located in appropriate sections based on the ANSI Z400.1-2004 format.

NOTE: This product is defined as an "Article" under the U.S. Federal OSHA Hazard Communication Standard (29 CFR 1910.1200), EU Directives, and the Canadian Workplace Hazardous Materials Standard. Refer to Section 15 (Regulatory Information) for specific regulatory citations. As an article, this product presents negligible health and physical hazards under reasonably anticipated circumstances of use. Subsequently, a Material Safety Data Sheet is not required under Standards cited above. This document is prepared to provide persons using this product with additional safety information.

2. HAZARD IDENTIFICATION

GLOBAL HARMONIZATION, EU CLP REGULATION (EC) 1272/2008 LABELING AND CLASSIFICATION, JAPANESE JIS Z 7253: 2012 LABELING AND CLASSIFICATION, KOREAN ISHA (Notice 2009-68) LABELING AND CLASSIFICATION, OR AUSTRALIAN NOHSC STANDARDS: This product is an article and is not required to be classified under any jurisdiction.

The lithium ion cell ingredients are contained in a hermetically sealed case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, hazardous materials are fully contained inside the battery. The battery should not be crushed, deformed, punctured, opened or exposed to heat because exposure to the ingredients contained within could be harmful under some circumstances. The following information is provided for the user's information only.

EMERGENCY OVERVIEW: Product Description: This product is a lithium ion battery. **Health Hazards:** This product is considered a manufactured article and presents negligible health, or reactivity hazards under typical use conditions. If exposure to the electrolyte solution occurs from puncture, heating or other destruction of the outer case, contact with the solution may be harmful by inhalation, skin or eye contact. Inhalation of fumes from burning electrolyte solution may cause burns to respiratory system. Skin or eye contact with the electrolyte solution may also produce burns, especially if contact is prolonged. **Flammability Hazards:** Batteries can explode during a fire. If involved in a fire, this product can burn and produce toxic gases (e.g. carbon monoxide, carbon dioxide, hydrogen fluoride, phosphine, phosphorous oxides, lithium oxides, lithium hydroxide, nickel oxides, copper oxides and other metal oxides). During a fire involving this product care should be taken to avoid inhalation of fumes. During charging of this battery, a lithium graphite intercalation phase is formed (where lithium and graphite molecules are combined), which is highly flammable and corrosive, but is not released under normal circumstances. **Reactivity Hazards:** The electrolyte solution can react with water to form hydrofluoric acid. Contact with the anodes can produce hydrogen gas. **Environmental Hazards:** This product is not expected to cause harm if released to the environment. **Emergency Response Considerations:** Emergency responders must wear proper personal protective equipment (and have appropriate fire protection) suitable for the situation to which they are responding.

3. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	EU EINECS #	JAPANESE ENC #	AUSTRALIAN AICS	Korean ECL #	% w/w	EU Classification (67/548/EEC) GHS & EU Classification (1272/2008) Risk Phrases/Hazard & Precautionary Statements
The following materials are part of the case of the battery:							
Aluminum	7429-90-5	231-072-3	Mineral-exempt	Listed	KE-00881	Proprietary	EU 67/548 Hazard Classification: Not Applicable. GHS & EU 1272/2008 Classification: Not Applicable.
Copper	7440-50-8	231-159-6	Mineral-exempt	Listed	KE-08896	Proprietary	EU 67/548 Hazard Classification: Not Applicable. GHS & EU 1272/2008 Classification: Not Applicable.
Plastic	Mixture	Mixture	Mixture	Mixture	Mixture	Proprietary	EU 67/548 Hazard Classification: Not Applicable. GHS & EU 1272/2008 Classification: Not Applicable.
Polyvinylidene Fluoride (PVDF)	24937-79-9	Exempt as a Polymer	6-933	Listed	KE-10546	Proprietary	EU 67/548 Hazard Classification: Not Applicable. GHS & EU 1272/2008 Classification: Not Applicable.
Steel	7439-89-6	231-096-4	Mineral-exempt	Listed	KE-21059	Proprietary	EU 67/548 Hazard Classification: Not Applicable. GHS & EU 1272/2008 Classification: Not Applicable.
Nickel, inert polymers and other trace compounds:						Balance	EU 67/548 Hazard Classification: Not Applicable. GHS & EU 1272/2008 Classification: Not Applicable.
The following materials are in the electrolyte mixture in the battery:							
Ethylene Carbonate	96-49-1	202-510-0	5-523	Listed	KE-12028	Proprietary	EU 67/548 Hazard Classification: Not Applicable. GHS & EU 1272/2008 Classification: Not Applicable.
Dimethyl Carbonate	616-38-6	210-478-4	2-2853	Listed	KE-11278	Proprietary	EU 67/548 Hazard Classification: Highly Flammable EU 67/548 Risk Phrases: R11 GHS & EU 1272/2008 Classification: Flammable Liquid Cat. 2 GHS & EU 1272/2008 Hazard Codes; H225
Lithium Hexafluorophosphate (LiPF ₆)	21324-40-3	244-334-7	Unlisted	Listed	KE-22564	Proprietary	EU 67/548 Hazard Classification: Not Applicable. GHS & EU 1272/2008 Classification: Not Applicable.
Other Linear, Cyclic Organic Carbonate Solvents	Mixture	Mixture	Mixture	Mixture	Mixture	Proprietary	EU 67/548 Hazard Classification: Not Applicable. GHS & EU 1272/2008 Classification: Not Applicable.
The following materials are for the electrodes:							
Carbon (graphite, acetylene black) [negative electrode]	7782-42-5	231-955-3	Mineral-exempt	Listed	KE-18101	Proprietary	EU 67/548 Hazard Classification: Not Applicable. GHS & EU 1272/2008 Classification: Not Applicable.
Lithium Cobaltite [positive electrode]	12190-79-3	235-362-0	1-100, 1-132	Listed	KE-06111	Proprietary	EU 67/548 Hazard Classification: Not Applicable. GHS & EU 1272/2008 Classification: Not Applicable.

See Section 16 for full text of Ingredient Risk Phrases and Precautionary Codes.

PART II What should I do if a hazardous situation occurs?

4. FIRST-AID MEASURES

PROTECTION OF FIRST AID RESPONDERS: Rescuers should be taken for medical attention, if necessary. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary.

DESCRIPTION OF FIRST AID MEASURES: Persons using this product should consult a physician or other medical professional if an accident involving this product results in injury. Specific first-aid measures are as follows:

Eye or Skin Contact: If skin or eye contact occurs to electrolyte solution, flush for 20 minutes. Contact physician or other medical health professional.

Inhalation: If any adverse effect occurs as a result of inhalation of fumes from thermal decomposition of the electrolyte solution during fire or other heating of battery, remove individual to fresh air. Seek medical attention if adverse effect occurs after removal to fresh air.

Ingestion: Not a potential route of exposure.

IMPORTANT SYMPTOMS AND EFFECTS: Acute: None. Chronic: None.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: No medical conditions are known to be aggravated by this product.

IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED: Treat symptoms and eliminate exposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %): Not applicable.

FIRE EXTINGUISHING MEDIA: Dry chemical powder, dry sand or dolomite or other metal fire extinction extinguishing material. Carbon dioxide should only be used on incipient fires.

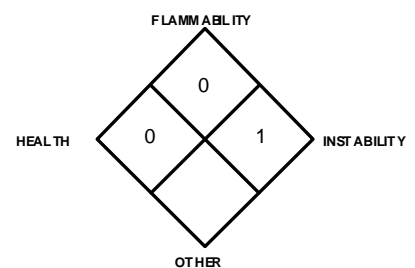
UNSUITABLE FIRE EXTINGUISHING MEDIA: Water.

SPECIAL FIRE AND EXPLOSION HAZARDS: Batteries can explode in a fire. Contact with the electrolyte solution and water can produce hydrofluoric acid. Contact with water and the charged anode will produce hydrogen gas. Products of thermal decomposition can include produce toxic gases (e.g. carbon monoxide, carbon dioxide, hydrogen fluoride, phosphine, phosphorous oxides, lithium oxides, lithium hydroxide, nickel oxides, copper oxides and other metal oxides). Damaged or opened cells or batteries can result in rapid heating and the release of flammable vapors. Vapors may be heavier than air and may travel along the ground or be moved by ventilation to an ignition source and flash back.

Explosion Sensitivity to Mechanical Impact: Not applicable. **Explosion Sensitivity to Static Discharge:** Not applicable.

SPECIAL PROTECTIVE ACTIONS FOR FIRE-FIGHTERS: Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment.

NFPA RATING



Hazard Scale: 0 = Minimal 1 = Slight
2 = Moderate 3 = Serious 4 = Severe

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Eliminate all sources of ignition before cleanup begins. Use non-sparking tools. The atmosphere must have levels of components lower than those listed in Section 8, (Exposure Controls and Personal Protective Equipment) if applicable, and have at least 19.5 percent oxygen before personnel can be allowed into the area without Self-Contained Breathing Apparatus (SCBA).

PERSONAL PROTECTIVE EQUIPMENT: For clean-up of leaking electrolyte solution, proper protective equipment should be used. In the event of a spill, clear the area and protect people.

Small Spills: Wear rubber gloves, splash goggles, and appropriate body protection.

Large Spills: Minimum Personal Protective Equipment should be rubber gloves, rubber boots, face shield, and Tyvek suit. Minimum level of personal protective equipment for releases in which the level of oxygen is less than 19.5% or is unknown must be **Level B: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hard hat, and Self-Contained Breathing Apparatus.**

METHODS FOR CLEAN-UP AND CONTAINMENT: No special accidental release measures are required for non-damaged batteries. Damaged batteries that are not hot or burning should be placed in a sealed container and disposed of according to all disposal regulations.

Small Spills: Wipe up spilled liquid with polypads or other suitable absorbent materials. Wash contaminated area with soap and water, absorb with paper towels, and rinse with water.

Large Spills: Trained personnel following pre-planned procedures should handle non-incident releases. Absorb spilled liquid with dry sand or other suitable non-reactive absorbent materials. Prevent material from entering sewer or confined spaces, waterways, soil or public waters. Monitor area and confirm levels are below exposure limits given in Section 8 (Exposure Controls-Personal Protection), if applicable, before non-response personnel are allowed into the spill area.

All Spills: Place all spill residue in an appropriate container and seal. Decontaminate the area thoroughly. If necessary, discard all stained response equipment or rinse with soapy water before returning such equipment to service. Do not mix with wastes from other materials. Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations). For spills on water, contain, minimize dispersion and collect. Dispose of recovered material and report spill per regulatory requirements.

ENVIRONMENTAL PRECAUTIONS: Prevent any spill residue from entering sewer or confined spaces.

PART III *How can I prevent hazardous situations from occurring?*

7. HANDLING and STORAGE

PRECAUTIONS FOR SAFE HANDLING: Never store different types of batteries or batteries with different chemistry together. Store away from acids, sources of heat or flame, or other incompatible materials as listed in Section 10 (Stability and Reactivity).

Should a battery unintentionally be crushed, thus releasing its contents, rubber gloves must be used to handle all battery components. Avoid inhalation of any vapors that may be emitted. In the event of skin or eye exposure to the electrolyte, refer to Section 4, First Aid Measures. Batteries should be separated from other materials and stored in a noncombustible, well ventilated, sprinkler-protected structure with sufficient clearance between walls and battery stacks.

The following information is from the Brady Lithium Battery Instructions and Precautions document:

LITHIUM-ION BATTERY HANDLING PRECAUTIONS

Before using the battery pack, read these important instructions. Failure to follow these instructions may result in electric shock, fire, and/or serious personal injury.

- 1. Do not disassemble, open, or modify the battery pack.** This may result in the risk of electric shock, fire or exposure to battery chemicals. If it is damaged, replace the battery.
- 2. Do not short circuit the battery pack.** A battery pack will short circuit if a metal object makes a connection between the positive and negative contacts on the battery. Do not transport or store the battery pack together with metal objects such as tools, hardware, etc. A short circuited battery may cause fire and personal injury.
- 3. Do not expose the battery pack to heat or fire, avoid storage in direct sunlight.** Batteries may explode, causing personal injury or damage. Toxic fumes and materials are created when batteries are burned.
- 4. Do not expose the battery pack to water or rain, or allow it to get wet.** Otherwise, the protective features in the battery pack can be damaged; the pack can exhibit extremely high current and or voltage, abnormal chemical reactions may occur in the pack, possibly leading to overheating, smoke emission, bursting and/or ignition.
- 5. Do not crush, drop, or damage batteries.** Do not use the battery pack that has received a sharp blow, been dropped, run over, or damaged in any way (e.g., pierced with a nail, hit with a hammer, stepped on).
- 6. Observe the plus (+) and minus (-) marks on the battery pack and equipment and ensure correct use.** If you cannot easily connect the battery pack to the battery pack charger or other equipment, confirm that the correct AC charger adapter specifically designed for charging is used for charging, or terminals are correctly oriented for operation. Using the improper charger adapter could result in reverse-charging and abnormal chemical reaction may occur, then possibly leading to leakage, overheating, smoke emission, bursting and/or ignition of the battery pack.
- 7. Recharge the battery pack outside the printer using the charger adapter specifically designed for that purpose** and observe the recharging conditions specified by the manufacturer. A recharging operation under non-conforming recharging conditions (beyond the limits of temperature and larger voltage/current than specified) can cause the battery pack to be overcharged, or charged with extremely high current, abnormal chemical reaction can occur in it, possibly leading to overheating, smoke emission, bursting and/or ignition.
- 8. Do not use the battery pack for a purpose other than those specified.** Misuse of battery pack may damage the battery pack, shorten battery pack life, result in risk of fire, electric shock or personal injury.

7. HANDLING and STORAGE (Continued)

CONDITIONS FOR SAFE STORAGE: Do not expose the battery pack or printer to water or rain, or allow them to get wet. This may damage the battery pack or printer. Do not use oil or solvents to clean or lubricate the battery. The plastic casing will become brittle and crack, causing a risk of injury. Store the battery pack in a cool, dry place. Do not store battery where temperatures may exceed 60°C (140°F) such as in direct sunlight, a vehicle or metal building during summer. Charger will charge the battery when the battery's internal temperature is between 0°C (32°F) and 45°C (113°F). When the battery pack temperature range is outside that range, charging will not occur. Dispose of Brady Lithium Ion Batteries according to federal, state and local regulations. Contact a recycling agency in your area for recycle locations.

SPECIFIC END USE(S): Label Printer battery pack BMP21-PLUS-BATT

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/CONTROL PARAMETERS:

Ventilation and Engineering Controls: No engineering controls are required for handling batteries that have not been damaged.

Exposure Limits/Control Parameters: The following limits are for the components of the electrolyte solution only.

CHEMICAL NAME	CAS #	EXPOSURE LIMITS IN AIR							
		ACGIH-TLVs		OSHA-PELs		NIOSH-RELs		NIOSH	OTHER
		TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	IDLH mg/m ³	mg/m ³
Ethylene Carbonate	96-49-1	NE	NE	NE	NE	NE	NE	NE	NE
Dimethyl Carbonate	616-38-6	NE	NE	NE	NE	NE	NE	NE	NE
Lithium Hexafluorophosphate The exposure limits given are for lithium oxide and lithium hydroxide	21324-40-3	NE	NE	NE	NE	NE	NE	NE	DFG MAK: STEL = 1 (ceiling)

NE = Not Established.

See Section 16 for Definitions of Other Terms Used

SAFE WORK AND HYGIENE PRACTICES: Do not short circuit, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. In event of release of electrolyte fluid, avoid contact by all routes of exposure.

PERSONAL PROTECTIVE EQUIPMENT: The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132), equivalent standards of Canada (including CSA Standard Z94.4-02 and CSA Standard Z94.3-02, U.S. OSHA 29 CFR 1910.136 and the Canadian CSA Standard Z195-02, *Protective Footwear*), standards of EU member states (including EN 529:2005 for respiratory PPE, CEN/TR 15419:2006 for hand protection, and CR 13464:1999 for face/eye protection), or standards of Australia (including AS/NZS 1715:1994 for respiratory PPE, AS/NZS 4501.2:2006 for protective clothing, AS/NZS 2161.1:2000 for glove selection, and AS/NZS 1336:1997 for eye protection), Australian Standard 1337-Eye Protection for Industrial Applications and Australian Standard 1336-Recommended Practices for Eye Protection in the Industrial Environment, Australian Standard 2161-Industrial Safety Gloves and Mittens, or Japanese Standards JIS T 8147:2003, JIS T 8116:2005 as well as Korean and Singapore Standards. Please reference applicable regulations and standards for relevant details.

Respiratory Protection: No special respiratory protection is required for use of this product during normal use.

Eye Protection: No special eye protection is required for use of this product. If batteries are damaged or leaking use safety goggles when handling the batteries.

Hand Protection: No special hand protection is normally required for use of this product. If batteries are damaged or leaking use wear butyl rubber, polyvinyl alcohol gloves or other appropriate glove.

Body/Skin Protection: No special body or skin protection is normally required for use of this product. If a hazard of injury to the feet exists due to falling objects or rolling objects use foot protection, as described in U.S. OSHA 29 CFR 1910.136 and the Canadian CSA Standard Z195-02, *Protective Footwear*.

9. PHYSICAL and CHEMICAL PROPERTIES

FORM: Manufactured article containing electrolyte solution.

MOLECULAR FORMULA: Mixture.

ODOR: Not applicable.

RELATIVE VAPOR DENSITY (air = 1): Not applicable.

SPECIFIC GRAVITY (water = 1): Not available.

SOLUBILITY IN WATER: Insoluble.

VAPOR PRESSURE: Not applicable.

HEAT OF COMBUSTION: Not available.

OXIDIZING PROPERTIES: Not an oxidizer.

EXPLOSIVE PROPERTIES: Heating or water contact may cause overpressure of outside casing and possible explosive result.

COEFFICIENT OF OIL/WATER DISTRIBUTION (PARTITION COEFFICIENT): Not applicable.

COLOR: Various parts have different colors.

MOLECULAR WEIGHT: Mixture.

ODOR THRESHOLD: Not applicable.

EVAPORATION RATE: Not applicable.

MELTING/FREEZING POINT: Not available.

BOILING POINT: Not applicable.

pH: Not applicable.

THERMAL CONDUCTIVITY: Not available.

10. STABILITY and REACTIVITY

CHEMICAL STABILITY: Stable.

DECOMPOSITION PRODUCTS: *Combustion:* carbon monoxide, carbon dioxide, hydrogen fluoride, phosphine, phosphorous oxides, lithium oxides, lithium hydroxide, nickel oxides, copper oxides and other metal oxides). *Hydrolysis:* Contact with the electrolyte solution and water can produce hydrofluoric acid. Contact with water and the charged anode will produce hydrogen gas.

10. STABILITY and REACTIVITY

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: The electrolyte solution is incompatible with potassium tert-butoxide, oxidizers, reducing agents, acids and alkalies.

POSSIBILITY OF HAZARDOUS REACTION/POLYMERIZATION: Intact batteries are not reactive. If the electrolyte solution inside the battery contacts water, a reaction generating heat may occur. Polymerization will not occur.

CONDITIONS TO AVOID: Avoid damaging batteries in any way that could release electrolyte solution. Avoid exposure to heat, flame, or other ignition source. Avoid contact with water. Avoid overcharging of batteries or other conditions as described in Section 7 (Handling or Storage).

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

SYMPTOMS OF EXPOSURE BY ROUTE OF EXPOSURE:

Inhalation: Under normal conditions of use and handling, no inhalation hazard is present. If battery is heated fumes from the electrolyte solution can cause moderate to severe irritation of the respiratory system.

Skin or Eye Contact: Under normal conditions of use and handling, no skin or eye hazard is present. If the battery case is punctured or otherwise damaged so that contact with the electrolyte solution occurs, contamination of the skin or eyes can be highly irritating or cause burns. Fumes from heated electrolyte solution will cause irritation of the eyes.

Skin Absorption: Some components of the electrolyte solution may be absorbed via intact skin. Due to the small amount of solution in the battery, significant toxic effect by this route of exposure is not expected.

Ingestion: Ingestion is not a likely route of exposure to the electrolyte solution.

Injection: Injection is not a likely route of exposure to the electrolyte solution.

HEALTH EFFECTS OR RISKS FROM EXPOSURE:

Acute: There is no health hazard anticipated to occur during routine use of this product. If damage or heating of the battery occurs, contact with the electrolyte solution or fumes from heating of the solution may cause moderate to severe irritation of skin, eyes and respiratory system.

Chronic: None known.

TARGET ORGANS: ACUTE: Respiratory system, skin, eyes (fumes from thermal decomposition). CHRONIC: None.

TOXICITY DATA: The following toxicity data is presented for components of the electrolyte solution only.

DIMETHYL CARBONATE:

LD₅₀ (Oral-Rat) 13 gm/kg
LD₅₀ (Oral-Mouse) 6 gm/kg
LD₅₀ (Skin-Rabbit) > 5 gm/kg
LD₅₀ (Intraperitoneal-Rat) 1600 mg/kg
LD₅₀ (Intraperitoneal-Mouse) 800 mg/kg

ETHYLENE CARBONATE:

Open Irritation Test (Skin-Rabbit) 660 mg: Mild
LD₅₀ (Oral-Rat) 10 gm/kg
LD₅₀ (Skin-Rabbit) > 3 gm/kg
LDLo (Intraperitoneal-Mouse) 500 mg/kg

CARCINOGENICITY: No components of the electrolyte solution are listed by agencies tracking the carcinogenic effect of chemical compounds. Some components of the case material are listed. Due to the physical nature of this product, carcinogenicity is not a hazard for this product.

IRRITANCY OF PRODUCT: This product is not irritating under normal circumstances of use or handling. Fumes from thermal decomposition are irritating by inhalation, skin or eye contact.

SENSITIZATION TO THE PRODUCT: Contact with this product does not pose a hazard of sensitization.

REPRODUCTIVE TOXICITY INFORMATION: As an article, this product is not expected to cause mutagenic, embryotoxic, teratogenic, or reproductive effects in humans.

ACGIH BIOLOGICAL EXPOSURE INDICES: None established

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

MOBILITY IN SOIL: Due to the form of this product, it is unlikely that it will be mobile in the soil.

PERSISTENCE AND BIODEGRADABILITY: This product has not been tested for persistence or biodegradability. The case of this product will not biodegrade.

BIO-ACCUMULATION POTENTIAL: This product has not been tested for bio-accumulation potential. Some materials within the cell are bio-accumulative. Under normal conditions, these materials are contained and pose no risk to persons or the surrounding environment.

ECOTOXICITY: This product is not expected to cause significant harm to plant and animal-life; however, all disposal should be according to current regulations. This product has not been tested for aquatic toxicity. All release of this product into an aquatic or terrestrial environment should be prevented.

RESULTS OF PBT and vPvB ASSESSMENT: No data available. PBT and vPvB assessments are part of the chemical safety report required for some substances in European Union Regulation (EC) 1907/2006, Article 14.

ENVIRONMENTAL EXPOSURE CONTROLS: Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT AND DISPOSAL METHODS: Dispose of in accordance with applicable International, Federal, State, and local procedures and standards. Batteries should be completely discharged prior to disposal and/ or the terminals taped or capped to prevent short circuit. When completely discharged it is not considered hazardous. Lithium ion batteries must be handled in accordance with all applicable state and federal laws and regulations.

13. DISPOSAL CONSIDERATIONS (Continued)

WASTE TREATMENT AND DISPOSAL METHODS (continued):

In the U.S. Lithium ion batteries are recyclable in the U.S. through the Rechargeable Battery Recycling Corporation's (RBRC) *Charge Up to Recycle! Program*. For information call 1-800-8-BATTERY or see their website at www.rbrc.org.

In the EU manufacturing, handling and disposal of batteries is regulated under Directive 2006/66/EC. Specific information on disposal of batteries by country can be found at website of the European Portable Batteries Association (http://www.epbaeurope.net/legislation_national.html).

PRECAUTIONS TO BE FOLLOWED DURING WASTE HANDLING: Do not mix different types of batteries with different chemistries in the same containers for disposal.

U.S. EPA WASTE NUMBER: Not applicable.

EWC WASTE CODE: 16 06 05: Other batteries and accumulators. 16 06 06: Electrolyte from batteries and accumulators. 17 04 07 Mixed metals.

14. TRANSPORTATION INFORMATION

This lithium ion battery pack is shipped according to the applicable transportation regulations listed on this SDS:

- ❖ U.S. Department of Transportation (DOT) Subchapter C of the Hazardous Materials Regulations,
- ❖ UN Recommendations on the Transport of Dangerous Goods,
- ❖ International Civil Aviation Organization (ICAO) Technical Instruction for the Safe Transport of Dangerous Goods by Air,
- ❖ International Aviation Transportation Association (IATA) Dangerous Goods Regulations,
- ❖ International Maritime Organization (IMO),
- ❖ Transport Canada Transportation of Dangerous Goods Regulations (TDG),
- ❖ European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR),
- ❖ Singapore Standard 286: Part A, and
- ❖ Australian Federal Office of Road Safety Code for the Transportation of Dangerous Goods by Road or Rail.

This lithium ion battery pack may be shipped according to the special provisions, exceptions and exemptions specified in the regulations listed above. Always refer to the latest transportation regulations prior to shipping this product as regulations may have changed.

LITHIUM ION BATTERY PACK (BMP21-PLUS-BATT) CHARACTERISTICS FOR TRANSPORTATION CLASSIFICATION:

Li-Ion BMP21-PLUS-BATT is a Small Secondary Rechargeable Battery pack containing 2 Lithium ion cells:

1. Energy Rating
 - a. Nominal (Li-Ion BMP21-PLUS-BATT) Amp Hour rating is 1.620 AHr
 - b. Nominal (Li-Ion BMP21-PLUS-BATT) energy is 11.98 Wh.
 - c. Li-Ion BMP21-PLUS-BATT WHr rating is marked on the outside of each individual battery case
2. Li-Ion BMP21-PLUS-BATT cell Chemistry is not Lithium Metal
 - a. Li-Ion BMP21-PLUS-BATT cell chemistry is Lithium ion
 - b. Li-Ion BMP21-PLUS-BATT is rechargeable
 - c. Li-Ion BMP21-PLUS-BATT Equivalent Lithium Content (ELC) is 0.972 gram/battery pack
 - d. ELC of each cell within battery pack is 0.486 g.
3. Weight
 - a. Li-Ion BMP21-PLUS-BATT weight is approximately 90 grams without packaging or booklet
4. UN Manual of Tests and Criteria, Part III, Subsection 38.3
 - a. Li-Ion BMP21-PLUS-BATT Assembly has passed Tests 1 through 8.
 - b. Li-Ion BMP21-PLUS-BATT cells have passed Tests 1 through 8
 - c. Documentation confirming the batteries have been so tested is available on Brady website www.Bradyid.com
5. Li-Ion BMP21-PLUS-BATT has Built-In Safety Features
 - a. Li-Ion BMP21-PLUS-BATT has internal short-circuit protection circuit
 - b. Li-Ion BMP21-PLUS-BATT has internal circuitry designed to prevent reversed polarity current flow
6. Li-Ion BMP21-PLUS-BATT has passed 1.2 M Drop Test
 - a. Individual battery packs have passed 1.2 M Drop Test
 - b. Fully packed carton as shipped from manufacturer has passed 1.2 M Drop Test
7. Li-Ion BMP21-PLUS-BATT is not considered a marine pollutant
8. Li-Ion BMP21-PLUS-BATT battery cells have a solid cathode.

15. REGULATORY INFORMATION

INTERNATIONAL CHEMICAL INVENTORIES: This product is considered an article under the chemical inventories listed below and consequently is exempt from listing on these inventories:

- U.S. EPA Toxic Substance Control Act (TSCA)
- Canadian DSL Inventory
- Canadian Chemical Registration Regulations (NDSL/DSL)
- European Inventory of Existing Chemical Substances (EINECS/ELINCS)
- Singapore Code of Practice on Pollution Control Requirements
- Australian Inventory of Chemical Substances (AICS)
- Japanese Existing and New Chemical Substance List (ENCS)
- Korean Existing Chemicals List (ECL)

However, based on the rules enforced with regards to the marketing and use of chemicals to manufacture this product, each chemical component of this finished product has been listed or exempt from the listed chemical inventories.

OTHER INTERNATIONAL REGULATIONS: As an article this product has no requirements under the following U.S. and International regulations:

- U.S. SARA Reporting & Threshold Planning Quantity (TPQ) Requirements
- U.S. CERCLA Reportable Quantity (RQ)
- California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)
- Canadian WHMIS Regulations (Hazardous Products Act, 6&7, Part II (Sections 11 and 12)).
- Canadian Environmental Protection Agency (CEPA) Priorities Substances Lists
- European Union Labeling/Classification (EU DIRECTIVE 37/548/EEC)
- Australian Standard for the Uniform Scheduling of Drugs and Poisons
- Japanese Minister of International Trade and Industry (MITI).
- Japanese Poisonous and Deleterious Substances Control Law
- Singapore Code of Practice on Pollution Control Requirements

ADDITIONAL EUROPEAN UNION REGULATIONS:

CHEMICAL SAFETY ASSESSMENT: No Data Available. The chemical safety assessment is required for some substances according to European Union Regulation (EC) 1907/2006, Article 14.

Substances of Very High Concern (SVHC) Status: Undetermined.

16. OTHER INFORMATION

GLOBAL HARMONIZATION, EU CLP REGULATION (EC) 1272/2008 LABELING AND CLASSIFICATION, JAPANESE JIS Z 7253: 2012 LABELING AND CLASSIFICATION, KOREAN ISHA (Notice 2009-68) LABELING AND CLASSIFICATION, OR AUSTRALIAN NOHSC STANDARDS: This product is an article and is not required to be classified under any jurisdiction.

EU LABELING AND CLASSIFICATION FOR COMPONENTS:

LABELING AND CLASSIFICATION FOR COMPONENTS UNDER GLOBAL HARMONIZATION AND EU CLP REGULATION (EC) 1272/2008 LABELING AND CLASSIFICATION:

Dimethyl Carbonate: The following is an official published classification under CLP 1272/2008.

Classification: Flammable Liquid Category 2

Hazard Statements: H225: Highly flammable liquid and vapour.

All Other Components: Not applicable.

LABELING AND CLASSIFICATION FOR COMPONENTS UNDER 67/548/EEC AND 2001/59/EC:

Dimethyl Carbonate: The following is an official published classification under 67/548 EEC.

Classification: [F]: Flammable

All Other Components: Not applicable.

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