MATERIAL SAFETY DATA SHEET (MSDS)

BARTEC BA9^{EX1} – 17-S1Z0-0020/0001 – Issue Date: 2024-08-05

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Rechargeable Li-ion Battery
Model	BARTEC BA9^{EX1} – 17-S1Z0-0020/0001
Rating	3.68V 4300mAh 15.8Wh (Nominal)
Company	Bartec GmbH
Address	Max-Eyth-Str. 16, Bad Mergentheim, 97980, Germany
Manufacturer	STARS Microelectronics (Thailand) Public Company Limited
Address	Bang Pa-In Industrial Estate (I-EA-T Free Zone), 605-606 Moo 2, Tambol Klongjig, Amphur Bang Pa-In, Ayutthaya 13160, Thailand
Telephone no.	+49 7931 597 0

2. COMPOSITION/INFORMATION ON INGREDIENTS

BATTERY CELL

HAZARDOUS INGREDIENTS	Content (%)	CAS #
Aluminum	< 10	7429-90-5
Copper	< 10	7440-50-8
Lithium Cobalt Dioxide(LiCoO2)	< 40	12190-79-3
Lithium Nickelate Dioxide(LiNiO2)		12031-65-1
Lithium Manganese Dioxide(LiMnO2)		12162-79-7
Polyvinylidene Fluoride (PVDF)	< 8	24937-79-9
Carbon	< 30	7440-44-0
Polyethylene	< 5	9002-88-4
Polypropylene	< 2	9003-07-0
Lithium hexafluorophosphate	< 20	21324-40-3
Ethylene carbonate		96-49-1
Ethyl methyl carbonate		623-53-0
1,3-Propane sultone		1120-71-4

Lithium contents in battery cell

Li ion battery cells are not manufactured to contain lithium metal and the lithiumequivalent content of batteries is 1.29g per cell (0.3 X 4300mAh = 1.29g)

3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS

3.1 PRIMARY ROUTES OF ENTRY

Skin contact, Skin absorption, Eye contact, Inhalation, and Ingestion: NO

3.2 SYMPTOMS OF EXPOSURE

Skin contact:	No effect under routine handling and use.
Skin absorption:	No effect under routine handling and use.
Eye contact:	No effect under routine handling and use.
Inhalation:	No effect under routine handling and use.

4. FIRST AID MEASURES

4.1 INHALATION

If contents of an opened cell are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice.

4.2 EYE CONTACT

Contact with the contents of an opened cell can cause burns. If eye contacts with contents of an open cell occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.

4.3 SKIN CONTACT

Contact with the contents of an opened cell can cause burns. If skin contact with contents of an open cell occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.

4.4 INGESTION

Contact with the contents of an opened cell can cause burns. If ingestion of contents of an open cell occurs, NEVER give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water.
DO NOT INDUCE VOMITING. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.

5. FIRE FIGHTING MEASURES

5.1 GENERAL HAZARD

Cell is not flammable but internal organic material will burn if the cell is incinerated.
Combustion products include, but are not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.

5.2 EXTINGUISHING MEDIA

Use extinguishing media suitable for the materials that are burning.

5.3 SPECIAL FIREFIGHTING INSTRUCTIONS

If possible, remove cell(s) from firefighting area. Do not heat pack above 125°C/257°F, as cell may explode/vent.

5.4 FIREFIGHTING EQUIPMENT

Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

6. ACCIDENTAL RELEASE MEASURES

6.1 ON LAND

Place material into suitable containers and call local fire/police department.

6.2 IN WATER

If possible, remove from water and call local fire/police department.

7. HANDLING AND STORAGE

Batteries should not be disassembled, destroyed or incinerated as they may leak, rupture and release chemicals into the environment.

7.1 HANDLING

Batteries are designed to be recharged. However, improperly charging a cell or battery may cause the cell or battery to ignite. Use only approved chargers and follow standard operating procedures. Never disassemble a battery or bypass any safety device. Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) goods. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in nonconductive (i.e. plastic) trays.

7.2 STORAGE

Do not store batteries above 60°C/140°F. Store batteries in a cool (below 25°C/77°C), dry area that is subject to little temperature change. Elevated temperatures can result in reduced battery service life. Do not store batteries in a manner that allows terminals to short circuit. Extended short-circuiting creates high temperatures in the cell. High temperatures can cause skin irritation or cause the cell to flame. Avoid reversing battery polarity within the battery assembly. Doing so may cause the cell to ignite or to leak. Do not place batteries near heating equipment, or expose to direct sunlight for long periods.

7.3 OTHER

Follow the manufacturer's recommendations regarding maximum recommended currents and operating temperature range. Applying pressure to the battery may cause disintegration, releasing irritant materials that are hazardous to the eye, skin, and throat.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 ENGINEERING CONTROLS

Keep away from heat and open flame. Store in a cool dry place.

8.2 PERSONAL PROTECTION

Ventilation/Respirator:	Not required during normal operations. SCBA required in the event of a fire.
Eye/face protection:	Not required beyond safety practices of employer.
Gloves:	Not required for handling of cells.
Foot protection:	Steel toed shoes recommended for large container handling.
Other protective wear or equipment:	Not necessary under normal use.

9. PHYSICAL AND CHEMICAL PROPERTIES

STATE	SOLID
Odor	N/A
PH	N/A
Vapor pressure	N/A
Vapor density	N/A
Boiling point	N/A
Specific gravity	N/A
Density	N/A

10. STABILITY AND REACTIVITY

10.1 REACTIVITY

None

10.2 INCOMPATIBILITIES

None during normal operation. Avoid exposure to heat, open flame, and corrosives.

10.3 HAZARDOUS DECOMPOSITION PRODUCTS

None during normal operating conditions. If cells are opened, hydrogen fluoride and carbon monoxide may be released.

10.4 CONDITIONS TO AVOID

Avoid exposure to heat and open flame. Do not puncture, crush or incinerate.

11. TOXICOLOGICAL INFORMATION

This product does not elicit toxicological properties during routine handling and use.

SENSITIZARION	TERATOGENICITY	REPRODUCTIVE	ACUTE TOXICITY
NO	NO	NO	NO

If the cells are opened through misuse or damage, discard immediately. Internalcomponents of cell are Irritants and sensitizers.

12.ECOLOGICAL INFORMATION

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.

13.DISPOSAL CONSIDERATIONS

13.1

Dispose in accordance with applicable regulations according to country (in most countries, the disposal of used batteries is forbidden and the end-users are invited to dispose them properly, eventually through not-for-profit or profit organizations, mandated by the local government or organized on a voluntary basis by professionals). The battery may be regulated by national or local regulation. Please follow the instructions of proper regulation. Do not dispose in household or commercial waste bin. For large quantities a disposal service is offered upon request.

13.2

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.

13.3

This product does not contain any materials listed by the United State EPA as requiring specific waste disposal requirements. These are exempted from the hazardous waste disposal standards under Universal Waste Regulations. Disposal of large quantities of Lithium-ion batteries or cells may be subject to federal, state, or local regulations.

13.4

Consult your local, state and provincial regulations regarding disposal of these batteries.

14. TRANSPORT INFORMATION

14.1

Lithium Ion batteries are considered to be "Rechargeable batteries" and meet the requirements of transportation by the U.S. Department of Transportation(DOT), International Civil Aviation Administration(ICAO).

14.2

Hereby we certify that this model of Lithium battery meets the requirements each test in the UN Manual of tests and Criteria, Part 3, sub-section 38.3.

14.3

Not regulated for Transport under Special Provision 188 of the International Maritime Dangerous Goods Code (IMDG)

14.4

Even classified as lithium ion batteries (UN3480), 2023 IATA Dangerous Goods Regulations 64th edition.
Product is applied to transportation regulations.
Cell and batteries: Packing Instruction 965 Section IB
Packed with Equipment: Packing Instruction 966 Section II
Contained in Equipment: Packing Instruction 967 Section II
The Product is handled as Non-Dangerous Goods by meeting the following.

14.5

Lithium ion cells and batteries offered for transport are not subject to other additional requirements of the UN. regulations if they meet the following;

- For cells, the Watt-hour rating is not more than 20Wh.
- For batteries, Watt-hour rating is not more than 100Wh.
- Each cell or battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and criteria Part 3 subsection 38.3.
- Each cells comply with Special Provision A154.
- Net quantity per package shall not exceed 10 kg.

14.6

The product has been evaluated according to the UN Manual of Tests and Criteria.

TEST ITEM	CRITERIA	RESULT
Altitude simulation	• No leakage, venting, disassembly rupture and no fire. • Measuring mass before/after each test. (If M>5g, less than 0.1%) • Measuring voltage before/after each test. (more than 90%) Pass	Pass
Thermal test		Pass
Vibration		Pass
Shock		Pass
External short circuit	• No disassembly, rupture and fire within six hours of this test. • Max. temperature should not exceed 170ºC.	Pass
Impact		Pass
Overcharge	• No disassembly and fire within seven days of the test.	N/A
Forced Discharge		Pass

15. REGULATORY INFORMATION

OSHA hazard communication standard (29 CFR 1910.1200) : Non-hazardous

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.

For further information, please contact a Bartec sales representative.

END OF SAFETY DATASHEET