

Lithium Cell & Battery Test Summary

In accordance with UN 38.3.5

(Lithium Cells / Batteries Contained within nShield Products)

Manufacturer & Product Information

Product Manufacturer	Entrust Security UK Limited (Formerly nCipher Security Limited)
Address & Contact Details	One Station Square, Cambridge, CB1 2GA, UK. Telephone: +44 (0)1223 622444 www.entrust.com hsminfo@entrust.com
Product Name	nShield 5c 10G
Product Description	The nShield 5c 10G Hardware Security Module (HSM) is a mains power product which provides a hardened, tamper-resistant environment for secure cryptographic processing.
Product Model Number	NH3010-yM-x ¹
Product Marketing Number	NH3010-xxxx ¹
Whole Product UN Classification	UN 3091 (PI 970, Section I, IMP: RLM)

Note 1 - Where x and y can be one or more alphanumeric or blank character(s) used to identify non-safety related configurations.

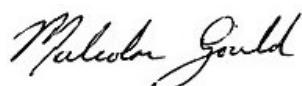
The product(s) identified above contain internal lithium metal cells for the purpose of real time clock and memory backup. This document includes component level UN 38.3 technical information, as supplied by the respective cell manufacturers.

Entrust certifies that, to the best of our knowledge and belief, the information contained in this document is accurate as of the date of publication. The content has been compiled through our internal compliance program and Entrust has made commercially reasonable efforts to ensure its reliability.

Declaration for and on behalf of Entrust Security UK Limited

Name: *Malcolm Gould*

Signature & Date:



17th October 2025

Position: *Regulatory Compliance Officer*

Lithium Cell & Battery Test Summary

In accordance with UN 38.3.5

(Lithium Cells Contained Within nShield Products)

Cell 1 - System Memory Backup		(See Annex A)
Cell Manufacturer	Jauch Quartz GmbH	
Address & Contact Details	In der Lache 24, D-78056 Villingen-Schwenningen, Germany Telephone: +49 7720 945-0 www.jauch.com info@jauch.com	
Cell Part Numberly Model	ER2650J-T C (Part no. 24729)	
Cell Description	C Size Lithium Metal Primary 3.6V cell (8.5Ah)	
Cell Size & Weight	50g	
Lithium Content Per Cell	2.20g	
Additional Notes	A System Memory Backup module may also be shipped with an nShield 5c 10G as a spare (P/N AC3339). Aggregated lithium content must be adjusted accordingly per shipment.	

Cell 2 – Motherboard Memory Backup		(See Annex B)
Cell Manufacturer	Tohoku Murata Manufacturing Co., Ltd.	
Address & Contact Details	1-1 Shimosugishita, Takakura, Hiwada-machi, Koriyama-shi, Fukushima, 963-0531 Japan Telephone: +81-24-955-7834 www.murata.com tmm-unr-smry@murata.com	
Cell Part Numberly Model	CR2477X	
Cell Description	CR2477X Size (Coin shaped) Lithium Metal Primary 3.0V cell (1000mAh)	
Cell Weight	9.5g	
Lithium Content Per Cell	0.28g	

Aggregated Product Level Information	
Aggregated Cell Weight	59.5g
Aggregated Lithium Content	2.48g*
Shipping Documentation	**IMPORTANT** A dangerous goods declaration is required when shipping this product with the System Memory Backup module installed (Cell 1)
Recommended Wording For Shipment Documentation	UN3091 Lithium Metal Batteries in Compliance with Section I PI 970 (Contained in Equipment) IMP: RLM Lithium Content: 2.48g Battery Net Weight: 59.5g An emergency contact telephone number of the last shipment/DG handler sign-off

**Annex A: Cell 1,
UN38.3 Test Summary &
Manufacturer's Safety Data Sheets**



**Lithium cells or batteries test summary according
to UN38.3**

Battery Manufacturer: Jauch Quartz GmbH In der Lache24 D-78056 Villingen-Schwenningen Germany +49 7720 945-0 www.jauch.com , info@jauch.com	UN38.3 Test Lab: SRICI TESTING West entrance, No.345 East Yunling Road, Shanghai +8621 52569800 www.ghs.cn wvorama@gmail.com																																				
Description of cell or battery: Cell/battery type: <input checked="" type="checkbox"/> Lithium metal <input type="checkbox"/> Lithium-ion Cell or battery: <input checked="" type="checkbox"/> cell <input type="checkbox"/> battery Model name: ER26500J-T C Part-no.: 247829 Voltage: 3.6V Capacity: 8.5Ah Energy: n/a Lithium content: 2.20g Weight of cell/battery: 50g Physical description: Lithium-Thionylchlorid round cell	Test report-no.: 1116070161 Sep. 05, 2019																																				
List of tests (result: pass/fail): <table border="1"> <thead> <tr> <th>Test number</th> <th>Test item</th> <th>Result</th> <th>Remarks</th> </tr> </thead> <tbody> <tr> <td>T-1</td> <td>Altitude</td> <td>pass</td> <td></td> </tr> <tr> <td>T-2</td> <td>Thermal cycling</td> <td>pass</td> <td></td> </tr> <tr> <td>T-3</td> <td>Vibration</td> <td>pass</td> <td></td> </tr> <tr> <td>T-4</td> <td>Shock</td> <td>pass</td> <td></td> </tr> <tr> <td>T-5</td> <td>External short circuit</td> <td>pass</td> <td></td> </tr> <tr> <td>T-6</td> <td>Impact /Crush</td> <td>pass</td> <td>for cell only</td> </tr> <tr> <td>T-7</td> <td>Overcharge</td> <td>N/A</td> <td></td> </tr> <tr> <td>T-8</td> <td>Forced Discharge</td> <td>pass</td> <td>for cell only</td> </tr> </tbody> </table>	Test number	Test item	Result	Remarks	T-1	Altitude	pass		T-2	Thermal cycling	pass		T-3	Vibration	pass		T-4	Shock	pass		T-5	External short circuit	pass		T-6	Impact /Crush	pass	for cell only	T-7	Overcharge	N/A		T-8	Forced Discharge	pass	for cell only	For air transportation only: State of charge <input type="checkbox"/> max. 30% <input checked="" type="checkbox"/> not applicable
Test number	Test item	Result	Remarks																																		
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Test results in accordance with the UNITED NATIONS "Recommendations on the TRANSPORT OF DANGEROUS GOODS" Manual of Test and Criteria ST/SG/AC.10/11 Rev.5, Amend. 1, 38.3. Cell manufacturing as well as battery assembly is done under the quality assurance program of ISO9001. This document remains valid as long as no changes, modifications or additions are made to the model(s) described in this document. The model(s) has (have) been classified according to the applicable transport regulation and the UN Manual of Test and Criteria as of the date of the certification. The model(s) must be packed, labelled and documented according to country and other international regulations for transportation.

Name / Title of Signatory / Date

Sönke Zacher / Project Manager

Jan. 01, 2025

Headquarters: Jauch Quartz GmbH · In der Lache 24 · 78056 Villingen-Schwenningen · Germany
Registry court: Freiburg HRB 602574, Managing Director: Thomas Jauch



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Product Safety Data Sheet

According Regulation (EC) No 1907/2006 (REACH) a safety data sheet must be provided for substances and preparations only. Batteries are "articles" and therefore not affected by the requirements of this Regulation.

Based on the definition of "article" in the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard, 29 CFR Subpart 1910.1200, there is no requirement for a Material Safety Data Sheet (MSDS) for lithium primary cells. There is no release of toxic chemicals under normal conditions of use.

Section I - Identification

Product Name: Lithium Metal (non-rechargeable) Battery

Model: ER Lithium Primary 3.6V cell

Chemical System: Lithium-Thionyl-Chloride (Li-SOCl₂)

Recommended use : no restriction (see section VII Handling and Storage)

Manufacturer: Jauch Quartz GmbH
 In der Lache 24
 78056 Villingen-Schwenningen / Germany
 Tel: +49 7720 945 0
www.jauch.com



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Section II – Hazard Identification

Batteries are articles and therefore exempted from the UN-GHS classification requirements. There are no GHS labelling requirements for articles. Other labelling requirements apply for batteries according to the EU Directive 2006/66 for batteries.

The chemicals mentioned in Section III are contained in a sealed can. Risk of exposure occurs only if the cell / battery is mechanically or electrically abused.

Section III – Composition / Information on ingredients

The regulations for substances are not applicable, as cells or batteries are articles under the relevant definitions. The chemicals mentioned are contained in a sealed steel can.

Risk of exposure occurs only if the cell / battery is mechanically or electrically abused.

Conditions to avoid: cells or batteries may explode when placed in a fire, when exposed to excessive heat, when opened or during inappropriate use.

Hazardous substances contained in the article according to UN-GHS (for information purposes only):

Chemical Name	Molecular Formula	CAS No.	Weight(%)
Lithium	Li	7439-93-2	3.5~5
Carbon	C	1333-86-4	3~6
Polytetrafluoroethylene	(C ₂ F ₄) _n	9002-84-0	≤0.5
Thionyl Dichloride	SOCl ₂	7719-09-7	40~45
Aluminium Chloride	AlCl ₃	7446-70-0	1~5
Lithium Chloride	LiCl	7447-41-8	≤0.5
Stainless Steel	N/A	N/A	30~36.5
Glass	Na ₂ O.CaO.6SiO ₂	N/A	0.05~0.5
Nickel	Ni	7440-02-0	≤1

The UN GHS labelling information is not provided in this section as batteries are articles and therefore are exempted from the UN GHS labelling requirements. Other labelling requirements apply for batteries according to EU Directive 2006/66/EC.

Section IV - First Aid Procedures

None unless internal material exposure.

Skin contact:

Contents of an opened battery can cause irritation, wash immediately with soap and water. Remove contaminated clothing. If irritation persists, get medical help.



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Eye contact:

Contents of an opened battery can cause severe irritation, IMMEDIATELY FLUSH THOROUGHLY WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. SEEK MEDICAL ATTENTION.

Ingestion:

CALL MEDICAL PRACTITIONER IMMEDIATELY

Inhalation:

Do not inhale leaked material. PROVIDE IMMEDIATELY FRESH AIR, IF IRRITATION PERSISTS, GET MEDICAL HELP.

Section V - Fire Fighting Instructions

5.1 Fire and explosion hazard:

The battery can leak and/or spout vaporized or decomposed and combustible electrolyte fumes in case of exposure above 100°C resulting from inappropriate use or the environment. Cells or batteries may flame or leak potentially hazardous organic vapors if exposed to excessive heat or fire. Fire, excessive heat, or over voltage conditions may produce hazardous decomposition products. 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 backfire, excessive heat, or over voltage conditions may produce hazardous decomposition products. During water application, caution is advised as burning pieces of flammable particles may be ejected from the fire.

5.2 Extinguishing Media:

Suitable CO2 or dry chemical extinguishers

Dry chemical or Foam extinguishers.

Special Fire Fighting Procedure: WEAR NIOSH APPROVED SCBA & FULL PROTECTIVE EQUIPMENT.

Unusual Fire and Explosion Hazards: NONE SPECIFIED BY MANUFACTURER.

As with any fire, wear self-contained breathing apparatus to avoid inhalation of hazardous decomposition products.

Section VI - Accidental Release

General

Chemical contents are sealed in metal can. But if the battery is mechanically or electrically abused, contents may leak out. In such case, take action as showing below.

The preferred response is to leave the area and allow the batteries to cool and the vapours to dissipate.



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Personal precautions

Avoid skin and eye contact or inhalation of vapours. Temporary inhalation of odor and attaching of electrolyte to skin does not cause serious health hazard. Be sure the ventilation and washing out of electrolyte quickly.

Environmental precautions

Collect all released material in a plastic lined metal container and remove spilled liquid with absorbent. Doing this, protect your skin and eyes with gloves and protection glasses. Avoid direct contact with internal components. Specific environmental precaution is not necessary.

Section VII – Handling and Storage

When used correctly, Lithium-Metal Battery (Non-Rechargeable Single cell Battery) provides a safe and dependable source of power. However, if they are misused or abused, leakage, venting, or in extreme cases explosion and/or fire may result.

Make sure to observe amongst others, following warnings.

Handling:

- Do not insert batteries in reverse. Observe the polarity markings on battery and equipment
- Do not short-circuit batteries
- Do not charge batteries
- Do not deform or disassemble batteries
- Do not incinerate or dispose batteries in fire
- Do not place battery on metal case, metal plate or antistatic material
- Do not mix batteries types or brands. In case of multi cell application, replace all batteries to new at once when replacing used batteries
- Do not heat batteries or exposure direct sunlight
- Do not weld or solder directly to batteries
- A battery with a damaged container should NOT be exposed to water
- Do not allow children to replace batteries without adult supervision
- Keep batteries out of the reach of children. In case of ingestion of a cell or battery, the person involved should seek medical assistance immediately
- Equipment intended for use by children should have battery compartments which are tamper-proof
- Do not encapsulate and/or modify batteries
- Exhausted batteries should be immediately removed from equipment and disposed of
- When discarding batteries with solder tags, insulate the tags by wrapping them with tape, foil, etc.

Storage:

- Store unused batteries in their original packaging and keep them away from metal objects which may short-circuit them. Storing unpackaged cells together could result in cell shorting and heat build-up
- Store and display batteries in their original packaging in well ventilated, dry and cool conditions



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- Avoid storing or display batteries in direct sun or in places where they get exposed to rain
- Do not stack battery cartons on top of each other exceeding a specified height. The height is clearly dependent on the strength of the packaging. As for general rule this height should not exceed 1.5 m for cardboard packages or 3 m for wooden cases. The above recommendations are equally valid for storage conditions during prolonged transit. Thus, batteries should be stored away from ship engines and not left for long periods in unventilated metal box cars (containers) during summer

Section VIII – Exposure Controls / Personal Protection

Respiratory protection (specify type):	Not necessary under conditions of normal use (see section VI)
Ventilation:	Not necessary under conditions of normal use (see section VI)
Protective gloves:	Not necessary under conditions of normal use (see section VI)
Eye protection:	Not necessary under conditions of normal use (see section VI)
Other protective clothing or equipment:	Not necessary under conditions of normal use

In the event, however, electrolyte should be released by mechanical or electrical abuse, use:

Respiratory protection	Mask (with a filter preferably)
Hand protection	Synthetic rubber gloves
Eye protection	Goggles or glasses (see section VI)

Section IX – Physical and Chemical Properties

The chemicals mentioned in Section II are contained in a sealed can. Under conditions of normal use, the chemicals will not be released.

Appearance:	Solid single cell
Nominal voltage:	Single cell: 3.6 volts

Section X – Stability and Reactivity

Since batteries utilize a chemical reaction, they are actually considered a chemical product. As such, battery performance will deteriorate over time even if stored for a long period of time without being used.

However, lithium batteries are contained in a stable steel container and are sealed to avoid any chemical release under normal conditions of use.



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Conditions to avoid: See Sections VII

Section XI – Toxicological Information

The chemicals mentioned in Section 3 are contained in a sealed can.

Risk of exposure occurs only if the battery is mechanically or electrically abused or if it is ingested.

Inhalation, skin contact and eye contact are only possible, if the cell is opened. Exposure to corrosive fumes are irritating to skin, eyes and mucous membranes.

Section XII – Ecological Information

The chemicals mentioned in Section III are contained in a sealed can. Under conditions of normal use, the chemicals will not be released.

It does not pose a physical or health risk to users, see section XIII for disposal.

Section XIII – Disposal Considerations

Waste disposal method:

a) Be sure to comply with your federal, state and local regulation disposal of used batteries. Dispose in accordance with appropriate national and international regulations, below some references.

European Community: according to Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE), Annex II, batteries have to be removed from any separately collected WEEE. The removed batteries have to be treated according to the Battery directive 2006/66/EC.

US: Lithium batteries are neither specifically listed nor exempted from the Federal Environmental Protection Agency (US EPA) hazardous waste regulations. The only material of possible concern due to its reactivity is lithium metal.

California use only: Perchlorate Material – special handling may apply.
See www.dtsc.ca.gov/hazardouswaste/perchlorate

Use a professional disposal firm for disposal of mass quantities of undischarged lithium batteries.

b) Open cells should be treated as hazardous waste

DO NOT INCINERATE or subject battery cells to temperatures in excess of 212°F (100°C). Such treatment can cause cell rupture.



Section XIV – Transportation Information

Dangerous Goods Classification Class 9 lithium batteries
UN-No. UN 3090, UN3091
Proper Shipping Name: Lithium Metal Batteries

Lithium-Metal cells and batteries are subject to the following transport rules:

Method	Technical Guidelines
Air	ICAO/IATA 65 th Ed. 2024
Road and Rail Europe	ADR / RID 2023
Sea	IMDG Code 2023 (Amdmt.41-22)
USA	DOT 49 CFR

Please use the transportation information for reference. Exact packaging, shipping documentation and labelling requirements vary depending on energy content of cell/battery, quantity, method of shipping, airline or forwarder. Make sure to confirm concrete actions in advance with your shipping company.

All cells and batteries of Jauch Quartz GmbH mentioned under Section I and Annex fulfil the conditions pursuant to the requirements for partly regulated transportation. UN Manual of Tests and Criteria Part III Subsection 38.3 (DGR 3.9.2.6).

Lithium-Metal cells and batteries are forbidden for transportation aboard passenger aircrafts.

Battery cartons should be handled with care. Rough handling may result in batteries being shorted or damaged. This may cause leakage, explosion or fire.

Section XV – Regulatory Information

- UN (United Nations): Recommendations on the Transportation of Dangerous Goods Model Regulations, Seventh revised edition, New York and Geneva 2019, Amendment 1, 2021
- ICAO (International Civil Aviation Organization): Technical Instructions for the safety transport of dangerous goods by air 2024
- IATA (International Air Transport Organization): Dangerous Goods Regulations 65th Edition; Effective January 1st, 2024
- ADR / RID 2023
- IMO (International Maritime Organization): International Maritime Dangerous Goods (IMDG) Code 2023 Edition (Amendment 41/22)
- EU Battery Regulation 2023/1542



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- California Code of Regulations, title 22, division 4.5: Chapter 33 – Best Management Practices for Perchlorate Materials

Section XVI – Other Information

Jauch lithium button cells are registered under Underwriters Laboratories Inc. under UL file number MH62838.

This information has been compiled accurately to the best of our knowledge and belief. However, Jauch Quartz GmbH excludes any warranty for the accuracy, reliability or completeness of the information contained herein. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use.

Edition date: 05.06.2024



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Annex – list of Lithium-Thionyl-Chloride cells and content of lithium

Type	Class 9 (UN)	Lithium (gr.)
ER2450T		0.13
ER32L65J (1/10D)		0.25
ER32L100J (1/6D)		0.44
ER14250J-S		0.31
ER14335J-S		0.43
ER14505J-S		0.67
ER17505J-S		0.93
ER18505J-S		0.98
ER26500J-S	Class 9	2.20
ER34615J-S	Class 9	4.92

**Annex B: Cell 2,
UN38.3 Test Summary &
Manufacturer's Safety Data Sheets**

**LITHIUM CELLS OR BATTERIES TEST SUMMARY
IN ACCORDANCE WITH SUB-SECTION 38.3
OF MANUAL OF TEST AND CRITERIA**

BATTERY TRANSPORTATION INFORMATION

<p>Name of cell, battery or product manufacturer, as applicable:</p> <p>Item Number : CR2477X Item Name : CR2477X Item Description : Lithium Metal Battery Cell</p>		<p>Cell, battery or product manufacturer's contact information to include address, phone number, email address and website for more information:</p> <p>Tohoku Murata Manufacturing Co., Ltd. 1-1 Shimosugishita, Takakura, Hiwada-machi, Koriyama-shi, Fukushima, 963-0531 Japan Phone: +81-24-955-7834 e-mail: tmm-unr-smry@murata.com Website: https://www.murata.com/en-global/group/tohokumurata</p>			
<p>Name of the test laboratory to include address, phone number, email address and website for more information:</p> <p>Tohoku Murata Manufacturing Co., Ltd. 1-1 Shimosugishita, Takakura, Hiwada-machi, Koriyama-shi, Fukushima, 963-0531 Japan Phone: +81-24-955-7834 e-mail: tmm-unr-smry@murata.com Website: https://www.murata.com/en-global/group/tohokumurata</p>		<p>A unique test report identification number:</p> <p>UN38.3-CR2477X(ID)</p>	<p>Date of the test report:</p> <p>Jan 14,2022</p>		
<p>Description of cell or battery to include at a minimum: Lithium ion or Lithium metal cell or battery; Mass; Watt-hour rating, or lithium content; Physical description of the cell/battery; and Model</p> <p>Cell/battery Type : Lithium Metal Cell or Battery :Cell LC or W/h rating :0.28g Cell or Battery Weight :9.5g Physical description :Lithium Metal Battery Cell(Coin shaped)</p>		<p>List of tests conducted and results (i.e., pass/fail):</p> <p>Test T.1: Altitude Simulation : Pass Test T.2: Thermal Test : Pass Test T.3: Vibration : Pass Test T.4: Shock : Pass Test T.5: External short circuit : Pass Test T.6: Impact : Pass Test T.7: Overcharge : Not applicable Test T.8: Forced discharge : Pass</p> <p>Testing additional comments:</p>			
<p>Reference to assembled battery testing requirements, if applicable (i.e., 38.3.3;(f) and 38.3.3;(g):</p> <p>Not Applicable</p>		<p>Reference to the revised edition of the Manual of Test and Criteria used and to amendments thereto, if any:</p> <p>Revision 6 Amendment 1</p>			
<p>PRODUCT CLASSIFICATION FOR TRANSPORT (According to UN – DGP)</p>					
<p>UN Classification:</p> <p>UN3090</p>	<p>Proper Shipping Name:</p> <p>Lithium Metal Battery Cell</p>				
<p>Signature with name and title of signatory as an indication of the validity of information provided:</p> <p>Hideaki Takahashi Quality Assurance Department </p>	<p>This document remains valid as long as no changes, modification, or additions are made to the model(s) described in this document, after being transported from a Tohoku Murata Manufacturing.</p> <p>The model(s) has (have) been classified according to the applicable transport regulations and the UN Manual of Tests and Criteria as of the date of the certification, The model(s) must be packed, labeled, and documented according to country and other international regulations for transportation.</p>				
<p>Date document was generated:</p> <p>Jan 14,2022</p>					

Page 1 of 1

Document No. SDS-CR-002-E

Safety Data Sheet

Note : SDS is not applicable to the products hermetically sealed. Under normal conditions of use, the battery is contained in a hermetically-sealed case, therefore the information herein contained is provided for your information only.

The information and recommendations set forth herein are made in good faith and are believed to be accurate as of the date of preparation. However, Tohoku Murata Manufacturing Co., Ltd. MAKES NO WARRANTY, EITHER EXPRESSED OR IMPLIED, WITH RESPECT TO THIS INFORMATION AND DISCLAIMS ALL LIABILITY FROM RELIANCE ON.

1. Product and company Identification

Product Name	Coin manganese dioxide lithium batteries
Model Name	CR1216%, CR1220%, CR1616%, CR1620%, CR1632%, CR2016%, CR2025%, CR2032%, CR2430%, CR2450%, CR2477% CR2032X%, CR2450X%, CR2477X%, CR3677X% CR2032R%, CR2450R%
Brand	murata
Company Name	Tohoku Murata Manufacturing Co., Ltd.
Company Address	1-1 Shimosugishita, Takakura, Hiwada-machi, Koriyama-shi, Fukushima 963-0531 JAPAN
Information Telephone	Japan +81-24-955-7854 FAX +81-24-955-7884
Emergency Telephone	+1(703)527-3887 (CHEMTREC)
E-mail address	tmm-qa-compliance@murata.com
Date Revised	January 1, 2025
Issued Department	Quality Assurance Department Tohoku Murata Manufacturing Co., Ltd.
Issuing person	Shun Sato <u>S. Sato</u>

The model name attached % means that valid for all models which the singular/plural digits of alphanumeric or marks (including a space) attached after the model name.

2. Hazard identification

The important hazards and adverse effects of the chemical product	No information available	
Chemical product- specific hazards	No information available	
Outline of an anticipated emergency	Hazard	Coin manganese dioxide lithium batteries contain flammable materials such as organic solvent and metallic lithium. If battery was disposed in fire, or battery temperature exceeded 100°C, explosion or ignition of the battery may be caused. When short-circuit is caused by jumbling the batteries, explosion or ignition may be caused due to heat generation.
	Toxicity	When battery is burned, generated vapor may cause eyes, skin and respiratory irritation.

3. Composition/information on ingredients

Portion	Ingredient	CAS No.	Content ratio wt%
Cathode	Manganese Dioxide	1313-13-9	20~40 wt%
Anode	Metallic Lithium	7439-93-2	1~3 wt% (Li < 0.3g *)
Electrolyte	Dimethoxyethane	110-71-4	1~7 wt%
	Propylene Carbonate	108-32-7	2~9wt%
	Lithium Perchlorate	7791-03-9	0.3~0.9wt%
	Acid Phthalic Anhydride	85-44-9	0~0.1wt%
Others	Stainless Steel	65997-19-5	40~65wt%
	Polypropylene	9003-07-0	2~5wt%

* CR3677X%: Metallic Lithium weight exceeds 0.3g to 1g or less.

4. First aid measures

Swallowing	Ingestion of a battery can be harmful. Contents of an opened battery can cause serious chemical burns of mouth, esophagus and gastrointestinal tract. In either case, do not induce vomiting nor give food or drink. Seek medical attention immediately.
Skin Contact	Contents of an opened battery can cause skin irritation. Wash skin with soap and water. If inflammation was caused on the skin, seek the medical attention.
Eye Contact	Contents of an opened battery can cause eye irritation. Immediately flush eyes thoroughly with water for several minutes. Seek medical attention.
Inhalation	Contents of an opened battery can cause respiratory irritation. Provide fresh air and call a doctor.

5. Fire fighting measures

Extinguishing Media	Powder, Carbon dioxide and Dry sand. Metallic Lithium contained in a battery reacts with water strongly, as a result, generates hydrogen gas. Extinguishing by water may cause explosion.
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6. Accidental release measures (In the case that electrolyte is leaked from battery.)

Personal precautions	Temporary inhalation of odor and attaching of electrolyte to skin does not cause serious health hazard. Be sure the ventilation and washing out of electrolyte quickly.
Environmental precautions	Wipe off with dry cloth and keep away from fire.

7. Precautions for safe handling and use

Handling	Since improper battery handling may cause leakage, overheating or explosion of the battery, the following precautions shall be observed. (1) Keep batteries away from children. Swallowing a battery can cause chemical burn or penetration of the mucous membrane tissue, in the worst case, may result in death. If infant happens to swallow a battery, seek medical attention immediately to take it out. (2) Do not short. (3) Insert batteries with positive (+) and negative (-) terminals correctly oriented. (4) Do not mix different type batteries or mix new and old ones together. (5) Do not directly heat, solder or throw into fire. (6) Do not modify, deform or disassemble the battery. (7) Do not have children replace batteries unsupervised by adults. (8) In case of swallowed battery, seek medical attention immediately. (9) This battery is not designed for recharging. To do so can cause leakage or explosion.
	Store in a cool, well-ventilated area. Do not store batteries at high-temperatures or high-humidity. Proper storage temperature is +5°C~+35°C. It is preferable not to exceed +35°C. Avoid extremely higher or lower humidity (85% or more, 45% or less). Avoid exposure to sunlight to prevent performance deterioration, swelling or leakage. Elevated temperature can result in shortened battery life. Since short circuit can cause burn hazard and leak or explode hazard, do not batteries jumbled in containers. Avoid to contact water, metallic chain or metallic chip which may result in short-circuit.

8. Exposure controls/personal protection

N/A

9. Physical and chemical properties

Condition	Solid
Appearance	Coin Shape
Nominal voltage	3 V

10. Stability and reactivity

Stability : Stable under normal conditions of use.
Condition to avoid : See Section 7.

11. Toxicological information

Under normal conditions of use, there is no risk to life and health, because ingredients of battery is hermetically sealed with metal case.

12. Ecological information

When exhausted battery is buried in the ground, it is confirmed that outflow of metal contained in the battery has been seldom found. But we have no ecological information.

13. Disposal considerations

When battery is disposed, isolate positive (+) and negative (-) terminals of the battery to avoid those terminals from touching each other. Batteries may be short-circuited when piled up or mixed with the other batteries in disorder.
Dispose in accordance with applicable federal, state and local regulations.

14. Transport information

UN Dangerous Goods List

UN No.	Name and Description	Class or division	Special provision	Packing instruction
3090	LITHIUM METAL BATTERIES	9	188 230 310 376 377 384 387	P903 P908 P909 P910 P911

【Sea transportation】

All lithium metal cells shipping from Tohoku Murata Manufacturing Co., Ltd. and their packing condition conform to the following regulations and meet the requirements, therefore they can be shipped as exemption from Class 9 Dangerous goods.

Outline of IMO-IMDG Code 2022 SP188

- For a lithium metal cell, aggregate lithium content is not more than 1g.
- Each cell is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria 8th revised edition, Part III, subsection 38.3.
- Cells shall be packed in inner packagings that completely enclose the cell.
- Each package shall be capable of withstanding a 1.2m drop test in any orientation without damage to cells contained therein, without shifting of the contents so as to allow battery to battery contact and without release of contents.
- Package shall not exceed 30kg gross mass.
- The specified information shall be indicated on each package.
- Each cell shall be manufactured under quality program specified by the United Nations.

【Air transportation】

For air transportation, it is necessary to comply with IATA DGR 66th Edition (Dangerous Goods Regulations, 66th Edition)

Dangerous Goods List on IATA DGR

UN No.	Proper Shipping Name/Description	Class or division	Packing Instruction	Passenger Aircraft	Cargo Aircraft	S.P.
3090	LITHIUM METAL BATTERIES	9	PI968 (Section IA)	Forbidden	Max Net Qty /Package 35kg	A88 A99 A154 A164 A183 A201 A206 A213 A334 A802
			PI968 (Section IB)	Forbidden	Max Net Qty /Package 2.5 kg	

※As all of murata Coin manganese dioxide lithium batteries contain lithium metals less than 1.0g, Packing Instruction 969/970 can be applicable to the products that murata Coin manganese dioxide lithium batteries are assembled into.

The equipment is excluded from dangerous goods regulation.

When our cell or battery is contained in equipment or packed with equipment, it is classified into UN3091.

*Related regulation, Issued documents

- International Air Transport Association (IATA):Dangerous Goods Regulations, 66th Edition
- International Civil Aviation Organization (ICAO): Technical Instructions for the Safe Transport of Dangerous Goods by Air, 2025-2026 Edition
- International Maritime Organization (IMO): International Maritime Dangerous Goods (IMDG) Code, 2022 Edition
- U.S. Department of Transportation (DOT) 49 CFR
- UN(SP188) :UN(United Nations):Recommendations on the Transport of Dangerous Goods: Model Regulations 23rd revised edition

15. Regulatory information

- REGULATION (EU) 2023/1542
- CA Lithium Perchlorate Regulation

16. Other information

For product quotations and sales inquiries, please contact the dedicated form on the Murata Manufacturing website.
Contact to : <<https://www.murata.com/en-global/contactform>>