Safety Data Sheet

RRC Batteries

Revision status

Revision	Valid from	Changes	Author
A	25Apr2017	First released version	DF
B	27jun2017	Change emergency phone numbers	DF
C	24oct2018	Template updated	HB
D	01jan2019	Regulation updated	TN
E	01oct2019	Added new products	TN
F	07oct2019	Updated template & Hazardous components	TN
G	04feb2020	New products, hazardous components and regulations	TN
H	29jan2021	Updated product list	TN

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1. Product and Company Identification

Important Note: As a solid, manufactured article, exposure to hazardous ingredients is not expected with normal use. This battery is an article pursuant to 29 CFR 1910.1200 and, as such, is not subject to the OSHA Hazard Communication Standard requirement. The information contained in this Safety Data Sheet contains valuable information critical to the safe handling and proper use of the product. This SDS should be retained and available for employees and other users of this product.

1.1. Product name

Secondary Lithium-Ion Batteries

1.2. Models

Model	Cell Configuration	Nominal Ratings	Battery Weight net.
RRC2020	3S3P	<11.25V / <9.22Ah / 99.60Wh	<490g
RRC2024	4S3P	14.40V / <6.60Ah / <95.00Wh	<600g
RRC2040	3S1P	<11.25V / <3.35Ah / <36.20Wh	<170g
RRC2040-2	3S2P	<11.25V / <6.90Ah / <74.52Wh	<340g
RRC2054	4S1P	<15.00V / <3.45Ah / <49.70Wh	<240g
RRC2054-2	4S2P	14.40V / 6.90Ah / 99.40Wh	<430g
RRC2054-2S	4S2P	14.40V / 6.80Ah / 97.9Wh	<450g
RRC2057	2S2P	<7.50V / <6.90Ah / <49.70Wh	<240g
RRC1120	1S1P	<3.70V / <2.40Ah / <8.50Wh	<42g
RRC1130	1S1P	<3.80V / <3.88Ah / <14.7Wh	<69g
RRC2130	2S1P	<7.60V / <4.04Ah / <29.5Wh	<172g
RRC2140	3S1P	<11.40V / <4.04Ah / <44.20Wh	<255g
RRC2037	2S1P	7.20V / 2.90Ah / 20.90Wh	121g

1.3. Manufacturer

RRC power solutions GmbH
Technologiepark 1
66424 Homburg/Saar
Germany
Mail: info@rrc-ps.de

1.4. Emergency phone number

USA and Canada: +1-800-535-5053
International: +1-352-323-3500

Remark:
The information and recommendations set forth are made in good faith and believed to be accurate as of the date of preparation. RRC power solutions GmbH makes no warranty, expressed or implied, with respect to this information and disclaims all liabilities from reliance on it.

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2. Hazards Identification

2.1. Classification of the substance or mixture

Preparation Hazards and Classification: The product is a Lithium ion cell or battery and is therefore classified as an article and is not hazardous when used according to the recommendations of the manufacturer. The hazard is associated with the contents of the cell or battery. Under recommended use conditions, the electrode materials and liquid electrolyte are non-reactive provided that the cell or battery integrity remains and the seals remain intact. The potential for exposure should not exist unless the cell or battery leaks, is exposed to high temperatures or is mechanically, electrically or physically abused/damaged. If the cell or battery is compromised and starts to leak, based upon the battery ingredients, the contents are classified as hazardous.

Hazard Summary
Physical hazards: Not classified for physical hazards.
Health hazards: Not classified for health hazards.
Environmental hazards: Not classified for hazards to the environment.
Specific hazards: Exposure to contents of an open or damaged cell or battery:
Contact with this material will cause burns to the skin, eyes and mucous membranes.
May cause sensitization by skin contact.
Main Symptoms: Symptoms include itching, burning, redness and tearing.

Hazardous Materials Information Label (HMIS)
Health: 0
Flammability: 1
Physical Hazard: 0

NFPA Hazard Ratings
Health: 0
Flammability: 1
Reactivity: 0
Unique Hazard:

GHS precautionary statements

Precautionary Statement(s) Prevention	P102: Keep out of reach of children. P103: Read label prior to use. P202: Do not handle until all safety precautions have been read and understood. P210: Keep away from heat/sparks/open flames/hot surfaces – No smoking. P234: Keep only in original container. P254: Wash hands thoroughly after handling.
Response (If cell/battery leaks)	P260: Do not breathe vapour or spray. P280: Wear protective gloves/protective clothing/eye protection/face protection. P301/330/331: IF SWALLOWED: Rinse mouth. DO NOT induce vomiting. P303/361/353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P304/340: If INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. P305/351/338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P310: Immediately call a POISON CENTER or doctor/physician. P363: Wash contaminated clothing before reuse. P370: In case of fire: Use carbon dioxide, dry chemical or water extinguisher.
Storage (Store as indicated in Section 7)	P402: Store in a dry place. P405: Store locked up. P410: Protect from sunlight.
Disposal	P406: Store any spilled/leaking electrolyte material in a corrosive resistant container with a resistant inner liner. P501: Dispose of batteries in accordance with applicable hazardous waste regulations.

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2.2. Other Hazards

Appearance, Colour and Odor: Solid object with no odor.

Primary Routes(s) of Exposure: These chemicals are contained in a sealed enclosure. Risk of exposure occurs only if the cell or pack is mechanically, thermally, electrically or physically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by inhalation, ingestion, eye contact and skin contact.

Potential Health Effect(s):
Acute (short term): see Section 8 for exposure controls.
In the event that this cell or pack has been ruptured, the electrolyte solution contained within the cell would be corrosive and can cause burns to skin and eyes.
Inhalation: Inhalation of materials from a sealed cell is not an expected route of exposure. Vapours or mists from a ruptured cell may cause respiratory irritation.
Ingestion: Swallowing of materials from a sealed cell is not an expected route of exposure. Swallowing the contents of an open cell can cause serious chemical burns to mouth, esophagus, and gastrointestinal tract.
Skin: Contact between the cell and skin will not cause any harm. Skin contact with the contents of an open cell can cause severe irritation or burns to the skin.
Eye: Contact between the cell and the eye will not cause any harm. Eye contact with the contents of an open cell can cause severe irritation or burns to the eye.
CHRONIC (long term): see Section 11 for additional toxicological data.

Interactions with other chemicals: Immersion in high conductivity liquids may cause corrosion and breaching of the cell or battery enclosure. The electrolyte solution inside of the cells may react with alkaline (basic) materials and present a flammability hazard.

Potential Environmental Effects: Not Available.

3. Composition/information on ingredients

3.1. Hazardous components

Cell Component	CAS No.	Chemical Name	*Mass range in cell (g/g %)
Cathode	12190-79-3 346417-97-8 12031-65-1	Lithium cobalt oxide (LiCoO2) Lithium Nickel Manganese Cobalt Oxide (LiNMnCoO2) Lithium nickel oxide (LiNiO2)	20-60
Anode	7782-42-5	Graphit Carbon	10-30
Base (Anode)	7440-50-8	Copper	1-15
Base (Cathode)	7429-90-5	AL	1-40
PVDF	24937-79-9	Polyvinylidenfluoride	<1
Electrolyte Salt	21324-40-3	Lithium hexafluorophosphate	0.05-5
Electrolyte Solvent	96-49-1 108-32-7 105-58-8 105-37-3 616-38-6 21324-40-3	Includes one or more of the following: Ethylene Carbonate Propylene Carbonate Diethyl Carbonate Ethyl propionate Dimethyl carbonate Lithium hexafluorophosphate	2-25

(*Quantities may vary depending on battery model)

Because of the cell structure the dangerous ingredients will not be available if used properly. During charge process a lithium graphite intercalation phase is formed.

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4. First Aid Measures

4.1. Description of first aid measures

The hazardous components of this cell or battery are contained within a sealed unit. The following measures are only applicable if exposure has occurred to components when a cell or battery leaks, is exposed to high temperatures or is mechanically, electrically or physically abused/damaged.
The hazardous contents are caustic alkaline electrolytes contained in cells with lithium metal oxide cathodes, graphite and carbon anodes and Polyvinylidenfluoride binders.
Ingestion: Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Quickly transport victim to an emergency care facility.
EYE: If eye contact with contents of an open cell occurs, immediately flush the contaminated eye(s) with water. Quickly transport victim to an emergency care facility.
Skin Contact: Immediately flush with water. If irritation or pain persists, seek medical attention.
Inhalation: Remove the patient from exposure into fresh air, seek medical attention.

4.2. Protection for First aiders

Do not enter corrosive vapour contaminated areas without a respirator or Self Contained Breathing Apparatus. Wear adequate personal protective equipment as indicated in
Section 8.
FIRST AID FACILITIES: Eye wash bottle, fountain, safety showers or at least a source of running water are required in the area where the product is used.

4.3. Most important symptoms & effects, acute & delayed, caused by exposure

ACUTE: The contents of the battery are rated as corrosive. Ingestion of the electrolyte could lead to severe gastrointestinal tract irritation with nausea, vomiting and potentially burns.
Inhalation of vapours may lead to severe irritation of the mouth and upper respiratory tract with a burning sensation, pain, burns and inflammation in the nose and throat; there may also be coughing or difficulty breathing. Eye contact may lead to severe eye irritation or in worst case scenario irreversible damage and possible eye burns. Skin contact may lead to irritation and possible skin burns.
CHRONIC: Skin contact may aggravate/exacerbate existing skin conditions, such as dermatitis. Chronic inhalation may lead to the same symptoms as listed for acute inhalation above.

4.4. Indication of any immediate medical attention and special treatment needed

ADVICE TO DOCTOR: Treat symptomatically if the person comes into contact with the corrosive electrolyte liquid contents of a damaged battery.

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5. Fire Fighting Measures

5.1. Suitable extinguishing media

Cold water and dry powder in large amount are applicable.
Use metal fire extinction powder or dry sand if only few cells are involved.

5.2. Special hazards arising from the chemical

May form hydrofluoric acid if electrolyte comes into contact with water.
In case of fire, the formation of the following flue gases cannot be excluded:
Hydrogen fluoride (HF), Carbon monoxide and carbon dioxide.

5.3. Protective equipment and precautions for fire-fighters

Wear self-contained breathing apparatus and protective suit.

5.4. Additional information

If possible, remove cell(s) from fire fighting area. If heated above 125°C, cell(s) can explode/vent. Cell is not flammable but internal organic material will burn if the cell is incinerated.

6. Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures

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 areas before entering. Wear adequate personal protective equipment as indicated in Section 8.

6.2. Environmental precautions

Absorb spilled material with non-reactive absorbent such as vermiculite, clay or earth. Prevent from into migration soil, sewers and natural waterways – inform local authorities if this occurs.

6.3. Methods and material for containment and cleaning up

Evacuate spill area immediately and remove sources of ignition. Do NOT touch spilled material. Clean-up personnel must be trained in the safe handling of this product. Spills may be absorbed on non-reactive absorbents such as vermiculite. Place cells or batteries into individual plastic bags and then place into appropriate containers and close tightly for disposal. Ensure that clean-up procedures do not expose spilled material to any moisture. Immediately transport closed containers outside. Lined steel drums are suitable for storage of damaged cells or batteries until proper disposal can be arranged.

7. Handling and Storage

7.1. Precaution for Handling

Avoid short circuiting the cell. Avoid mechanical damage of the cell. Do not open or disassemble.
Advice on protection against fire and explosion.
Keep away from open flames, hot surfaces and sources of ignition.

7.2. Condition for storage

Storage at room temperature (approx. 20°C) at approx. 20~60% of the nominal capacity
(OCV approx. 3.60 - 3.90 V/cell).
Keep in closed original container.

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8. Exposure controls/personal protection Exposure limit values Exposure limits

Ingredient	Risk Codes	Safety Description	Hazard	Exposure Controls /Personal Protection
Cobalt oxide	R22,R43, R50/53	S24,S37, S60,S61	Xn(Harmful) N (Dangerous for the environment)	0.1 mg/m3 (TWA)
Lithium hexafluorophosphate	R22, R24, R34	S26-36, S37,S39-45,S28A	Xi (Irritant) T (Toxic) C (Corrosive)	2.5 mg/m3 (TWA)
Carbon	R36 R37/38, R20,R10	S22 S24/25	F(Highly Flammable) Xn(Harmful) Xi(Irritant)	**Airborne Exposure Limits:** - OSHA Permissible Exposure Limits (PEL): activated carbon (graphite, synthetic): Total particulate = 15 mg/m3
Manganese (VI) oxide	R20/22	S25	Xn(Harmful)	**Airborne Exposure Limits:** - OSHA Permissible Exposure Limit (PEL): 5 mg/m3 Ceiling for manganese compounds as Mn - ACGIH Threshold Limit Value (TLV): 0.2 mg/m3 (TWA) for manganese, elemental and inorganic compounds as Mn
Nickel oxide	R43,R49, R53	S45,S53, S61	T(Toxic)	**Airborne Exposure Limits:** For Nickel, Metal and Insoluble Compounds, as Ni: - OSHA Permissible Exposure Limits (PEL): 1 mg/m3 (TWA). For Nickel, Elemental / Metal: - ACGIH Threshold Limit Value (TLV) - 1.5 mg/m3 (TWA), A5 - Not suspected as a human carcinogen. For Nickel, Insoluble Compounds, as Ni: - ACGIH Threshold Limit Value (TLV) - 0.2 mg/m3 (TWA), A1 – Confirmed human carcinogen
Aluminium foil	R17,R15, R36/38, R10,R67, R65,R62, R51/53, R48/20, R38,R11	S7/8,S43, S26,S62 S61, S36/37 S33,S29, S16,S9	F(Highly Flammable) Xn(Harmful) Xi(Irritant)	**Airborne Exposure Limits:** -OSHA Permissible Exposure Limit (PEL): 15 mg/m3 (TWA) total dust and 5 mg/m3 (TWA) repairable fraction for Aluminium metal as Al -ACGIH Threshold Limit Value (TLV): 10 mg/m3 (TWA) Aluminium metal dusts
Copper	R11,R36 R37,R38	S5,S26, S16,S61, S36/37	F(Highly Flammable) N(Dangerous for the environment) Xn(Harmful) Xi(Irritant)	**Copper Dust and Mists, as Cu:** - OSHA Permissible Exposure Limit (PEL) - 1 mg/m3 (TWA) - ACGIH Threshold Limit Value (TLV) - 1 mg/m3 (TWA) Copper Fume: - OSHA Permissible Exposure Limit (PEL) - 0.1 mg/m3 (TWA) - ACGIH Threshold Limit Value (TLV) - 0.2 mg/m3 (TWA)
Polyvinylidene fluoride (PVdF)		S22, S24/25		

Full text of each relevant R phrase can be found in chapter 16.

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8.1. Exposure Control Measures

Exposure Limit Values: Airborne exposures to hazardous substances are not expected when the cells or batteries are used for their intended purposes. Exposure standards are not applicable to the sealed articles.
Biological Monitoring: Not applicable.
Control Banding: Not applicable.
Recommended monitoring procedures: Follow standard monitoring procedures.
Derived no-effect level (DNEL): Not applicable.
Derived minimal effect level (DMEL): Not applicable.
Predicted no-effect concentrations (PNECs): Not applicable.

8.2. Engineering Controls

Engineering Controls: Special ventilation is not required when using these products in normal use scenarios. Ventilation is required if there is leakage from the cell or battery.

8.3. Individual Protection Measures

Eye and Face protection: Eye protection is not required when handling cells or batteries during normal use. Wear safety glasses/goggles if handling a leaking or ruptured cell or battery.
Skin (Hand) protection: Hand protection is not required when handling the cell or battery during normal use. PVC gloves are recommended when dealing with a leaking or ruptured cell or battery.
Skin (clothing) protection: Skin protection is not required when handling the cell or battery during normal use. Wear long sleeved clothing to avoid skin contact if handling a leaking or ruptured cell or battery. Soiled clothing should be washed with detergent prior to re-use.
Respiratory protection: During routine operation, a respirator is not required. However, if dealing with an electrolyte leakage and irritating vapours are generated, an approved half face inorganic vapour and gas/acid/particulate respirator is required.
Thermal Protection: Not applicable.
Other Protective Equipment: Have a safety shower or eye wash station readily available.

8.4. Hygiene Measures

Do not eat, drink or smoke in work areas. Avoid storing food, drink or tobacco near the product.
Practice and maintain good housekeeping.

8.5. Environmental exposure controls

Avoid release to the environment.

9. Physical and Chemical Properties

9.1. Appearance

Form:	Solid
Colour:	Various
Odour:	Odourless

9.2. Important health, safety and environmental information

Test method	
PH Value:	n.a.
Flash point:	n.a.
Lower explosion limits:	n.a.
Vapour pressure:	n.a.
Density:	n.a.
Water solubility:	Insoluble
Ignition temperature:	n.a.

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10. Stability and Reactivity

10.1. Stability

Stable

10.2. Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition.
Do not puncture, crush or incinerate.

10.3. Materials to avoid

No materials to be especially mentioned.

10.4. Hazardous decomposition products

In case of open cells, there is the possibility of hydrofluoric acid and carbon monoxide release.

10.5. Possibility of Hazardous Reactions

Will not occur.

10.6. Additional information

No decomposition if stored and applied as directed.

11. Toxicological Information

11.1. Information on toxicological effects

The hazardous components of the cell or battery are contained within a sealed unit. Under recommended use conditions, the electrode materials and liquid electrolyte are non-reactive provided that the cell or battery integrity remains and the seals remain intact. The potential for exposure should not exist unless the battery leaks, is exposed to high temperature or is mechanically, electrically or physically abused/damaged.
The following toxicology data is in respect to if a person comes into contact with the electrolyte.

11.2. Acute Toxicity

Swallowed: The electrolyte contained within the cell or battery is a corrosive liquid.
Ingestion of this electrolyte would be harmful. Swallowing may result in nausea, vomiting, diarrhea, abdominal pain and chemical burns to the gastrointestinal tract. During normal usage ingestion should not be a means of exposure.
Eye: The electrolyte contained within the cell or battery is a corrosive liquid and it is expected that it would cause irreversible damage to the eyes. Contact may cause corneal burns. Effects may be slow to heal after eye contact. Correct handling procedures incorporating appropriate eye protection should minimize the risk of eye irritation.
Skin: The electrolyte contained within the cell or battery is a corrosive liquid and it is expected that it would cause skin burns or severe irritation to the skin if not washed off immediately.
Correct handling procedures should minimize the risk of skin irritation. People with pre-existing skin conditions, such as dermatitis, should take extreme care so as not to exacerbate the condition.
Inhaled: Inhalation of vapours from a leaking cell or battery is expected to cause severe irritation of the mouth and upper respiratory tract with a burning sensation, pain, burns and inflammation in the nose and throat; there may also be coughing or difficulty breathing.

Skin Corrosion/Irritation: The electrolyte contained within the cell or battery is classified as a corrosive liquid and is expected to exhibit dermal corrosively/irritation.

Serious Eye Damage/Irritation: The electrolyte contained within the cell or battery is classified as a corrosive liquid and is expected to exhibit serious damage/corrosively.

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Respiratory or Skin Sensitization: The electrolyte contained within the cell or battery is not expected to be a skin sensitizer according to OECD test 406, based on the available data and the known hazards of the components. The electrolyte contained within the battery is not expected to be a respiratory tract sensitizer, based on the available data and the known hazards of the components.

Germ Cell Mutagenicity: The electrolyte contained within the cell or battery is not expected to be mutagenic according to test such as OECD tests 471, 475, 476, 478 and 479, based on the available data and the known hazards of the components.

Carcinogenicity: The electrolyte contained within the cell or battery is not expected to be a carcinogen. The cathode contains Cobalt and Nickel components. These components are classified as IARC 2B – possibly carcinogenic to humans, however they do not pose a threat when contained in the cell or battery sealed unit.

Reproductive Toxicity: The electrolyte contained within the cell or battery is not expected to be a reproductive hazard according to test such as OECD tests 414 and 421, based on the available data and the known hazards of the components.

Specific Target Organ Toxicity (STOT) – Single Exposure: The electrolyte contained within the cell or battery is corrosive and is expect to cause respiratory irritation by inhalation. Inhalation of vapours may lead to severe irritation of the mouth and upper respiratory tract with a burning sensation, pain, burns and inflammation in the nose and throat; there may also be coughing or difficulty breathing.

Specific Target Organ Toxicity (STOT) – Repeated Exposure: The cells or batteries are not expected to cause organ damage from prolonged or repeated exposure according to tests such as OECD tests 410 and 412, based on the available data and the known hazards of the components.

Aspiration Hazard: The cells or batteries are not classified as an aspiration hazard, based on the available data and the known hazards of the components. However, due to the corrosive nature of the product if swallowed, do NOT induce vomiting. If vomiting has occurred after ingestion the person should be observed to ensure that aspiration into the lungs has not occurred and assessed for chemical burns to the gastrointestinal and respiratory tracts.

12. Ecological Information

12.1. Further information

Ecological injuries are not known or expected under normal use.
Do not flush into surface water or sanitary sewer system.

13. Disposal Considerations

13.1. Advice on disposal

For recycling consult manufacturer.

13.2. Contaminated packaging

Disposal in accordance with local regulations.

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14. Transport Information

RRC's batteries have been successfully tested and comply with the UN Model Regulations, Manual of Test and Criteria, Part III, subsection 38.3. Product batteries have been manufactured under a quality management program as specified in 2.9.4 of the UN Model Regulations.
Batteries have also passed IATA 1.2m drop test.

Test results of the UN Recommendation on the Transport of Dangerous Goods

Manual of Test and Criteria (38.3 Lithium battery)		**Test Results**	**Remark**
No	Test item		
T1	Altitude Simulation	Pass	
T2	Thermal Test	Pass	
T3	Vibration	Pass	
T4	Shock	Pass	
T5	External Short Circuit	Pass	
T6	Impact	Pass	
T7	Overcharge	Pass	
T8	Forced Discharge	Pass	

RRC's batteries contain no more than 20Wh/cell and 100Wh/battery pack and meet the requirements for transportation under:

- UN Model Regulations 21th revised edition Special Provisions 188 and 230
- International Civil Aviation Organization (ICAO) Technical Instructions and the International Air Transport Association (IATA) Dangerous Goods Regulations 62th Edition 2021
  Packing Instructions:
  - 965 Section IB or Section II (UN3480, Lithium ion batteries)
    - These batteries will be offered for transport at a state of charge (SOC) not exceeding 30% of their rated design capacity.
  - 966 Section II (UN3481, Lithium ion batteries packed with equipment)
  - 967 Section II (UN3481, Lithium ion batteries contained in equipment)
- International Maritime Organization (IMO) Edition 2016, Special Provisions 188 and 230
- European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) Special Provisions 188 and 230
- U.S. Department of Transportation (DOT) 49 CFR 173.185 and 173.185(c)
- Canadian Transport of Dangerous Goods Regulations (TDGR) Special Provision 34

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15. Regulatory Information

15.1. Canadian Federal Regulations

These products have been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.
WHMIS Classification: Not Controlled, manufactured article.
New Substance Notification Regulations: Lithium hexafluorophosphate is listed on the Non-Domestic Substance List (NDSL). All other ingredients in the product are listed, as required, on Canada's Domestic Substances List (DSL).
National Pollutant Release Inventory (NPRI) Substances: These products do not contain any NPRI chemicals.

15.2. United States Federal and State Regulations

TSCA Status: All ingredients in these products are listed on the TSCA inventory.
OSHA: These products do not meet criteria as per Part 1910.1200, manufactured article.
SARA EPA Title III: None.
Sec. 302/304: None.
Sec. 311/312: None.
Sec. 313: None.
CERCLA RQ: None.

15.3. Australia and New Zealand

SUSMP: Not applicable
AICS: All ingredients are on the AICS list.
HSNO Approval number: Not applicable
HSNO Group Title: Not applicable
NOHSC: 10008 Risk Phrases: R34 - Causes Burns.
NOHSC: 1008 Safety Phrases:
S1 – Keep locked up.
S2 – Keep out of reach of children.
S23 – Do not breathe vapour.
S24/25 – Avoid contact with skin and eyes.
S26 – In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S27/28 – After contact with skin, take off immediately all contaminated clothing and wash immediately with plenty of water.
S36/37/39 – Wear suitable protective clothing, gloves and eye/face protection.
S56 – Dispose of this material and its container at hazardous waste or special waste collection point.
S62 – If swallowed, DO NOT induce vomiting: seek medical advice immediately and show this container or label.
S64 – If swallowed, rinse mouth with water (Only if the person is conscious).

15.4. EC Classification for the Substance/Preparation

These products are not classified as hazardous according to Regulation (EC) No. 1272/2008.
Keep out of the reach of children.

15.5. EU Restrictions on use

Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended: Aluminium (CAS 7429-90-5)

15.6. Other EU Regulations

This Safety Data Sheet complies with the requirements of Regulation (EC) No. 1907/2006.

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15.7. Japanese Regulations

Japanese Industrial Standards (JIS) JIS Z 7253:2012
Waste disposal and public cleaning law
Law for Promotion of Effective Utilization of Resources

15.8. Taiwanese Regulations

Regulation of Labelling and Hazard Communication of Dangerous and Harmful Materials:
Labelling requirements and other relevant provision of chemicals, this product is not classified as dangerous goods. Toxic Chemicals Substance Control Law: Not Listed. CNS 1030016 Safety of primary and secondary lithium cells and batteries during transport.

15.9. Chinese Regulations

General Rule for Classification and Hazard Communication of Chemicals (GB 13690-2009):
Specifies the classification, labelling and hazard communication of chemicals in compliance with the GHS standard for chemical production sites and labelling of consumer goods.
General Rule for Preparation of Precautionary Labels for Chemicals (GB 15258-2009):
Specifies the relevant application methods of precautionary labels for chemicals.
Safety Data Sheet for Chemical Products Content and Order of Sections (GB/T 16483-2008)

16. Other Information

16.1. Full text of R-phrases referred under section 8

R10	Flammable.
R11	Highly flammable.
R15	Contact with water liberates extremely flammable gases.
R17	Spontaneously flammable in air.
R20/22	Harmful by inhalation and if swallowed.
R22	Harmful if swallowed.
R24	Toxic in contact with skin.
R34	Causes burns.
R36	Irritating to eyes.
R37	Irritating to respiratory system.
R38	Irritating to skin.
R40	Limited evidence of a carcinogenic effect.
R43	May cause sensitization by skin contact.
R48/23	Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R49	May cause cancer by inhalation.
R50	Very toxic to aquatic organisms.
R51	Toxic to aquatic organisms.
R53	May cause long-term adverse effects in the aquatic environment.
R62	Possible risk of impaired fertility.
R65	Harmful: may cause lung damage if swallowed.
R67	Vapours may cause drowsiness and dizziness.

16.2. Further Information

Data of sections 4 to 8, as well as 10 to 12, do not necessarily refer to the use and the regular handling of the product (in this sense consult package leaflet and expert information), but to release of major amounts in case of accidents and irregularities. The information describes exclusively the safety requirements for the product(s) and is based on the present level of our knowledge. This data does not constitute a guarantee for the characteristics of the product(s) as defined by the legal warranty regulations. "(n.a. = not applicable; n.d. = not determined)"
The data for the hazardous ingredients were taken respectively from the last version of the sub-contractor's safety data sheet.

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