

# Lithium-ion battery in equipment – Radii Xpert

## SDI Limited

Version No: 2.1.1.1

Safety Data Sheet (Conforms to Regulation (EU) No 2015/830)

Issue Date: 11/09/2017

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## SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

### 1.1. Product Identifier

Product name	Lithium-ion battery in equipment – Radii Xpert
Synonyms	Lithium-ion (Li-ion) battery pack. Nominal voltage: 3.7V, Rated capacity: 2600mAh; Wh rating: 10Wh.
Proper shipping name	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)
Other means of identification	Not Available

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Battery in Radii Plus and Radii Cal, to be used as dental curing lights. Potentially hazardous materials are sealed and contained in equipment. Equipment is packed in strong outer packaging to withstand normal handling and use. Exposure could occur if the equipment has been exposed to high temperatures (>125°C), battery or cells have been opened, crushed, disassembled or burned.
Uses advised against	Not Applicable

### 1.3. Details of the supplier of the safety data sheet

Registered company name	SDI Limited	SDI (North America) Inc.	SDI Brazil Industria E Comercio Ltda
Address	3-15 Brunsdon Street Bayswater VIC 3153 Australia	1279 Hamilton Parkway Itasca IL 60143 United States	Rua Dr. Virgilio de Carvalho Pinto, 612 São Paulo CEP 05415-020 Brazil
Telephone	+61 3 8727 7111	+1 630 361 9200	+55 11 3092 7100
Fax	+61 3 8727 7222	Not Available	+55 11 3092 7101
Website	www.sdi.com.au	Not Available	www.sdi.com.au
Email	info@sdi.com.au	Not Available	brasil@sdi.com.au

Registered company name	SDI Germany GmbH
Address	Hansestrasse 85 Cologne D-51149 Germany
Telephone	+49 0 2203 9255 0
Fax	+49 0 2203 9255 200
Website	www.sdi.com.au
Email	germany@sdi.com.au

### 1.4. Emergency telephone number

Association / Organisation	SDI Limited	Not Available	Not Available
Emergency telephone numbers	+61 3 8727 7111	+61 3 8727 7111	Not Available
Other emergency telephone numbers	131126	Not Available	Not Available

Association / Organisation	Not Available
Emergency telephone numbers	Not Available
Other emergency telephone numbers	Not Available

## SECTION 2 HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

Classification according to regulation (EC) No 1272/2008 [CLP]	Not Applicable
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### 2.2. Label elements

Hazard pictogram(s)	Not Applicable
SIGNAL WORD	<b>NOT APPLICABLE</b>

### Hazard statement(s)

Not Applicable

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## Supplementary statement(s)

<b>EUH210</b>	Safety data sheet available on request.
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## Precautionary statement(s) Prevention

Not Applicable

## Precautionary statement(s) Response

Not Applicable

## Precautionary statement(s) Storage

Not Applicable

## Precautionary statement(s) Disposal

Not Applicable

## 2.3. Other hazards

<b>cadmium</b>	Listed in the European Chemicals Agency (ECHA) Candidate List of Substances of Very High Concern for Authorisation
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## SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

## 3.1. Substances

See 'Composition on ingredients' in Section 3.2

## 3.2. Mixtures

1.CAS No 2.EC No 3.Index No 4.REACH No	%[weight]	Name	Classification according to regulation (EC) No 1272/2008 [CLP]
		Battery Cell contains	
1.12190-79-3 2.235-362-0 3.Not Available 4.01-2119974118-31-XXXX	<38	<u>lithium cobaltate</u>	Not Applicable
1.21324-40-3 2.244-334-7 3.Not Available 4.01-2119383485-29-XXXX	<3	<u>lithium fluorophosphate</u>	Metal Corrosion Category 1, Acute Toxicity (Oral) Category 4, Acute Toxicity (Dermal) Category 3, Skin Corrosion/Irritation Category 1B, Serious Eye Damage Category 1; H290, H302, H311, H314 <sup>[1]</sup>
1.96-49-1 2.202-510-0 3.Not Available 4.01-2119540523-46-XXXX	<6	<u>ethylene carbonate</u>	Skin Corrosion/Irritation Category 2, Serious Eye Damage Category 1, Specific target organ toxicity - single exposure Category 3 (respiratory tract irritation); H315, H318, H335, AUH019 <sup>[1]</sup>
1.Not Available 2.Not Available 3.Not Available 4.Not Available	<8	chain carbonate	Not Applicable
1.7782-42-5 2.231-955-3 3.Not Available 4.01-2119486977-12-XXXX 01-2119875125-36-XXXX	<20	<u>graphite</u>	Eye Irritation Category 2A, Specific target organ toxicity - single exposure Category 3 (respiratory tract irritation), Specific target organ toxicity - repeated exposure Category 2; H319, H335, H373 <sup>[1]</sup>
1.7439-92-1 2.231-100-4 3.082-013-00-1 082-014-00-7 4.01-2119513221-59-XXXX	<0.1	<u>lead</u>	Reproductive Toxicity Category 1A, Acute Toxicity (Inhalation) Category 2, Acute Toxicity (Dermal) Category 1, Acute Toxicity (Oral) Category 2, Specific target organ toxicity - repeated exposure Category 2, Acute Aquatic Hazard Category 1, Chronic Aquatic Hazard Category 1; H360Df, H330, H310, H300, H373, H410 <sup>[3]</sup>
1.7439-97-6 2.231-106-7 3.080-001-00-0 4.01-2119548380-42-XXXX	<0.0005	<u>mercury (elemental)</u>	Reproductive Toxicity Category 1B, Acute Toxicity (Inhalation) Category 2, Specific target organ toxicity - repeated exposure Category 1, Acute Aquatic Hazard Category 1, Chronic Aquatic Hazard Category 1; H360D, H330, H372, H410 <sup>[3]</sup>
		Note: other 25% includes the below materials:	
		Al (Positive Base Film, Cap, Can, Tab)	
		Cu (Negative film base)	
		Ni (Tab, Terminal)	
		Fe (Terminal)	
		Resin (PP, PE, PET) (Separator, Plastic, Parts, Insulator)	
		Circuit Module contains	
1.7439-92-1 2.231-100-4 3.082-013-00-1 082-014-00-7 4.01-2119513221-59-XXXX	<0.1	<u>lead</u>	Reproductive Toxicity Category 1A, Acute Toxicity (Inhalation) Category 2, Acute Toxicity (Dermal) Category 1, Acute Toxicity (Oral) Category 2, Specific target organ toxicity - repeated exposure Category 2, Acute Aquatic Hazard Category 1, Chronic Aquatic Hazard Category 1; H360Df, H330, H310, H300, H373, H410 <sup>[3]</sup>

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1.7439-97-6 2.231-106-7 3.080-001-00-0 4.01-2119548380-42-XXXX		<u>mercury (elemental)</u>	Reproductive Toxicity Category 1B, Acute Toxicity (Inhalation) Category 2, Specific target organ toxicity - repeated exposure Category 1, Acute Aquatic Hazard Category 1, Chronic Aquatic Hazard Category 1; H360D, H330, H372, H410 <sup>[3]</sup>
1.7440-47-3 2.231-157-5 3. Not Available 4.01-2119485652-31-XXXX		<u>chromium</u>	Carcinogenicity Category 2, Acute Aquatic Hazard Category 3; H351, H402 <sup>[1]</sup>
1.7440-43-9 2.231-152-8 3.048-002-00-0 048-011-00-X 4.01-2119489023-40-XXXX		<u>cadmium</u>	Carcinogenicity Category 1B, Germ cell mutagenicity Category 2, Reproductive Toxicity Category 2, Acute Toxicity (Inhalation) Category 2, Specific target organ toxicity - repeated exposure Category 1, Acute Aquatic Hazard Category 1, Chronic Aquatic Hazard Category 1; H350, H341, H361fd, H330, H372, H410 <sup>[3]</sup>
		plastic case and Si2O	
		Plastic Parts and Paints contains	
1.25971-63-5 2. Not Available 3. Not Available 4. Not Available	>81	<u>bisphenol A/ phosgene polymer</u>	Not Applicable
1. Not Available 2. Not Available 3. Not Available 4. Not Available	<12	flame retardant	Not Applicable
1. Not Available 2. Not Available 3. Not Available 4. Not Available	<7	elastomer	Not Applicable
<b>Legend:</b>		1. Classification by vendor; 2. Classification drawn from EC Directive 67/548/EEC - Annex I ; 3. Classification drawn from EC Directive 1272/2008 - Annex VI 4. Classification drawn from C&L	

## SECTION 4 FIRST AID MEASURES

## 4.1. Description of first aid measures

<b>Eye Contact</b>	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>▶ Immediately hold eyelids apart and flush the eye continuously with running water.</li> <li>▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.</li> <li>▶ Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.</li> <li>▶ Transport to hospital or doctor without delay.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>
<b>Skin Contact</b>	<p>If skin or hair contact occurs:</p> <ul style="list-style-type: none"> <li>▶ Flush skin and hair with running water (and soap if available).</li> <li>▶ Seek medical attention in event of irritation.</li> </ul>
<b>Inhalation</b>	<ul style="list-style-type: none"> <li>▶ If fumes or combustion products are inhaled remove from contaminated area.</li> <li>▶ Seek medical attention.</li> </ul>
<b>Ingestion</b>	<ul style="list-style-type: none"> <li>▶ Not considered a normal route of entry.</li> <li>▶ For advice, contact a Poisons Information Centre or a doctor at once.</li> <li>▶ Urgent hospital treatment is likely to be needed.</li> <li>▶ <b>If swallowed do NOT induce vomiting.</b></li> <li>▶ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> <li>▶ Observe the patient carefully.</li> <li>▶ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.</li> <li>▶ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.</li> <li>▶ Transport to hospital or doctor without delay.</li> </ul>

## 4.2 Most important symptoms and effects, both acute and delayed

See Section 11

## 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

## SECTION 5 FIREFIGHTING MEASURES

## 5.1. Extinguishing media

Use dry chemical powder, alcohol-resistant foam, carbon dioxide, or water as a fine spray.

## 5.2. Special hazards arising from the substrate or mixture

<b>Fire Incompatibility</b>	None known.
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## 5.3. Advice for firefighters

<b>Fire Fighting</b>	<p>Slight hazard when exposed to heat, flame and oxidisers.</p> <ul style="list-style-type: none"> <li>▶ Use fire fighting procedures suitable for surrounding area.</li> <li>▶ <b>DO NOT</b> approach containers suspected to be hot.</li> <li>▶ Cool fire exposed containers with water spray from a protected location.</li> <li>▶ If safe to do so, remove containers from path of fire.</li> </ul>
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	<ul style="list-style-type: none"> <li>▶ Equipment should be thoroughly decontaminated after use.</li> </ul>
<b>Fire/Explosion Hazard</b>	<ul style="list-style-type: none"> <li>▶ The material is not readily combustible under normal conditions.</li> <li>▶ However, it will break down under fire conditions and the organic component may burn.</li> <li>▶ Not considered to be a significant fire risk.</li> <li>▶ Heat may cause expansion or decomposition with violent rupture of containers.</li> <li>▶ Decomposes on heating and may produce toxic fumes of carbon monoxide (CO).</li> <li>▶ May emit acid smoke.</li> </ul>

**SECTION 6 ACCIDENTAL RELEASE MEASURES****6.1. Personal precautions, protective equipment and emergency procedures**

See section 8

**6.2. Environmental precautions**

See section 12

**6.3. Methods and material for containment and cleaning up**

<b>Minor Spills</b>	<p>Clean up all spills immediately. Avoid contact with skin and eyes. Place in suitable containers for disposal.</p>
<b>Major Spills</b>	<ul style="list-style-type: none"> <li>▶ Clean up all spills immediately.</li> <li>▶ Wear protective clothing, safety glasses, dust mask, gloves.</li> <li>▶ Secure load if safe to do so. Bundle/collect recoverable product.</li> <li>▶ Use dry clean up procedures and avoid generating dust.</li> <li>▶ Vacuum up (consider explosion-proof machines designed to be grounded during storage and use).</li> <li>▶ Water may be used to prevent dusting.</li> <li>▶ Collect remaining material in containers with covers for disposal.</li> <li>▶ Flush spill area with water.</li> </ul>

**6.4. Reference to other sections**

Personal Protective Equipment advice is contained in Section 8 of the SDS.

**SECTION 7 HANDLING AND STORAGE****7.1. Precautions for safe handling**

<b>Safe handling</b>	<p>Use good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this SDS. Avoid physical damage to containers.</p>
<b>Fire and explosion protection</b>	See section 5
<b>Other information</b>	<ul style="list-style-type: none"> <li>▶ Store away from incompatible materials.</li> <li>▶ Keep dry.</li> <li>▶ Store under cover.</li> <li>▶ Protect containers against physical damage.</li> <li>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> </ul> <p>Store out of direct sunlight Keep away from heat and naked flames.</p>

**7.2. Conditions for safe storage, including any incompatibilities**

<b>Suitable container</b>	▶ <b>DO NOT repack.</b> Use containers supplied by manufacturer only.
<b>Storage incompatibility</b>	▶ Avoid strong acids, acid chlorides, acid anhydrides and chloroformates.

**7.3. Specific end use(s)**

See section 1.2

**SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION****8.1. Control parameters****DERIVED NO EFFECT LEVEL (DNEL)**

Not Available

**PREDICTED NO EFFECT LEVEL (PNEC)**

Not Available

**OCCUPATIONAL EXPOSURE LIMITS (OEL)****INGREDIENT DATA**

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Ireland Occupational Exposure Limits - Intended Changes	lithium cobaltate	Cobalt & cobalt compounds (as Co)	Not Available	0.1 mg/m <sup>3</sup>	Not Available	Not Available
European Union (EU) Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to	lead	Inorganic lead and it's compounds	0,15 mg/m <sup>3</sup>	Not Available	Not Available	Not Available

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chemical agents at work - Annex I: List of Binding Occupational Exposure Limit Values (English)						
European Union (EU) Third List of Indicative Occupational Exposure Limit Values (IOELVs) (English)	mercury (elemental)	Mercury and divalent inorganic mercury compounds including mercuric oxide and mercuric chloride (measured as mercury) ( 7 )	0,02 mg/m3	Not Available	Not Available	Not Available
European Union (EU) Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work - Annex I: List of Binding Occupational Exposure Limit Values (English)	lead	Inorganic lead and it's compounds	0,15 mg/m3	Not Available	Not Available	Not Available
European Union (EU) Third List of Indicative Occupational Exposure Limit Values (IOELVs) (English)	mercury (elemental)	Mercury and divalent inorganic mercury compounds including mercuric oxide and mercuric chloride (measured as mercury) ( 7 )	0,02 mg/m3	Not Available	Not Available	Not Available
European Union (EU) Commission Directive 2006/15/EC establishing a second list of indicative occupational exposure limit values (IOELVs)	chromium	Chromium Metal, Inorganic Chromium (II) Compounds and Inorganic Chromium (III) Compounds (insoluble)	2 mg/m3	Not Available	Not Available	Not Available
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)	chromium	Chromium Metal, Inorganic Chromium (II) Compounds and Inorganic Chromium (III) Compounds (insoluble)	2 mg/m3	Not Available	Not Available	Not Available
Ireland Occupational Exposure Limits	chromium	Chromium metal	2 mg/m3	Not Available	Not Available	IOELV
Ireland Occupational Exposure Limits	cadmium	Cadmium	0,025 mg/m3	Not Available	Not Available	Carc.1B
Ireland Occupational Exposure Limits - Intended Changes	cadmium	Cadmium compounds, except cadmium oxide fume and cadmium sulphide pigments (as Cd	Not Available	0,01; 0,002 mg/m3	Not Available	Not Available


## EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
lithium fluorophosphate	Lithium hexafluorophosphate	7.5 mg/m3	83 mg/m3	500 mg/m3
ethylene carbonate	Glycol carbonate; (Ethylene carbonate)	30 mg/m3	330 mg/m3	2,000 mg/m3
graphite	Graphite; (Mineral carbon)	6 mg/m3	16 mg/m3	95 mg/m3
lead	Lead	0.15 mg/m3	120 mg/m3	700 mg/m3
mercury (elemental)	Mercury vapor	0.15 mg/m3	Not Available	Not Available
lead	Lead	0.15 mg/m3	120 mg/m3	700 mg/m3
mercury (elemental)	Mercury vapor	0.15 mg/m3	Not Available	Not Available
chromium	Chromium	1.5 mg/m3	17 mg/m3	99 mg/m3
cadmium	Cadmium	Not Available	Not Available	Not Available

Ingredient	Original IDLH	Revised IDLH
lithium cobaltate	Not Available	Not Available
lithium fluorophosphate	Not Available	Not Available
ethylene carbonate	Not Available	Not Available
chain carbonate	Not Available	Not Available
graphite	1,250 mg/m3	Not Available
lead	Not Available	Not Available
mercury (elemental)	Not Available	Not Available
lead	Not Available	Not Available
mercury (elemental)	Not Available	Not Available
chromium	250 mg/m3	Not Available
cadmium	9 mg/m3	Not Available
bisphenol A/ phosgene polymer	Not Available	Not Available
flame retardant	Not Available	Not Available
elastomer	Not Available	Not Available

## MATERIAL DATA

## 8.2. Exposure controls

8.2.1. Appropriate engineering controls	None under normal operating conditions. Provide adequate ventilation in warehouse or closed storage areas.
8.2.2. Personal protection	

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<b>Eye and face protection</b>	None under normal operating conditions. <b>OTHERWISE:</b> ▶ Safety glasses.
<b>Skin protection</b>	See Hand protection below
<b>Hands/feet protection</b>	None under normal operating conditions. <b>OTHERWISE:</b> ▶ Rubber Gloves
<b>Body protection</b>	See Other protection below
<b>Other protection</b>	None under normal operating conditions. <b>OTHERWISE:</b> ▶ Overalls. ▶ PVC Apron. ▶ PVC protective suit may be required if exposure severe. ▶ Eyewash unit. ▶ Ensure there is ready access to a safety shower.
<b>Thermal hazards</b>	Not Available

**Respiratory protection**

Type AHG-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required. Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	AHG-AUS P2	-	AHG-PAPR-AUS / Class 1 P2
up to 50 x ES	-	AHG-AUS / Class 1 P2	-
up to 100 x ES	-	AHG-2 P2	AHG-PAPR-2 P2 ^

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO<sub>2</sub>), G = Agricultural chemicals, K = Ammonia(NH<sub>3</sub>), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

- ▶ Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- ▶ The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- ▶ Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.
- ▶ Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- ▶ Use approved positive flow mask if significant quantities of dust becomes airborne.
- ▶ Try to avoid creating dust conditions.

**8.2.3. Environmental exposure controls**

See section 12

**SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES****9.1. Information on basic physical and chemical properties**

<b>Appearance</b>	Solid articles, insoluble in water.		
<b>Physical state</b>	Solid	<b>Relative density (Water = 1)</b>	Not Available
<b>Odour</b>	Not Available	<b>Partition coefficient n-octanol / water</b>	Not Available
<b>Odour threshold</b>	Not Available	<b>Auto-ignition temperature (°C)</b>	Not Available
<b>pH (as supplied)</b>	Not Available	<b>Decomposition temperature</b>	Not Available
<b>Melting point / freezing point (°C)</b>	Not Available	<b>Viscosity (cSt)</b>	Not Available
<b>Initial boiling point and boiling range (°C)</b>	Not Available	<b>Molecular weight (g/mol)</b>	Not Applicable
<b>Flash point (°C)</b>	Not Available	<b>Taste</b>	Not Available
<b>Evaporation rate</b>	Not Available	<b>Explosive properties</b>	Not Available
<b>Flammability</b>	Not Available	<b>Oxidising properties</b>	Not Available
<b>Upper Explosive Limit (%)</b>	Not Available	<b>Surface Tension (dyn/cm or mN/m)</b>	Not Applicable
<b>Lower Explosive Limit (%)</b>	Not Available	<b>Volatile Component (%vol)</b>	Not Available
<b>Vapour pressure (kPa)</b>	Not Available	<b>Gas group</b>	Not Available
<b>Solubility in water (g/L)</b>	Immiscible	<b>pH as a solution (1%)</b>	Not Available
<b>Vapour density (Air = 1)</b>	Not Available	<b>VOC g/L</b>	Not Available

**9.2. Other information**

Not Available

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## SECTION 10 STABILITY AND REACTIVITY

<b>10.1. Reactivity</b>	See section 7.2
<b>10.2. Chemical stability</b>	Product is considered stable and hazardous polymerisation will not occur.
<b>10.3. Possibility of hazardous reactions</b>	See section 7.2
<b>10.4. Conditions to avoid</b>	See section 7.2
<b>10.5. Incompatible materials</b>	See section 7.2
<b>10.6. Hazardous decomposition products</b>	See section 5.3

## SECTION 11 TOXICOLOGICAL INFORMATION

## 11.1. Information on toxicological effects

<b>Inhaled</b>	Not normally a hazard due to physical form of product.
<b>Ingestion</b>	Considered an unlikely route of entry in commercial/industrial environments Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. Ingestion may result in nausea, abdominal irritation, pain and vomiting
<b>Skin Contact</b>	Not normally a hazard due to physical form of product.
<b>Eye</b>	Not normally a hazard due to physical form of product.
<b>Chronic</b>	Not normally a hazard due to physical form of product.

<b>Lithium-ion battery in equipment – Radium Xpert</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Not Available	Not Available
<b>lithium cobaltate</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Not Available	Not Available
<b>lithium fluorophosphate</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Oral (rat) LD50: 50-300 mg/kg <sup>[1]</sup>	Not Available
<b>ethylene carbonate</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	dermal (rat) LD50: >2000 mg/kg <sup>[1]</sup>	Eye (rabbit): 20 mg - mild
	Oral (rat) LD50: >2000 mg/kg <sup>[1]</sup>	Skin (rabbit): 660 mg - moderate
<b>graphite</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Inhalation (rat) LC50: >2 mg/l4 h <sup>[1]</sup>	Not Available
	Oral (rat) LD50: >2000 mg/kg <sup>[2]</sup>	
<b>lead</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	dermal (rat) LD50: >2000 mg/kg <sup>[1]</sup>	Not Available
	Inhalation (rat) LC50: >5.05 mg/l4 h <sup>[1]</sup>	
<b>mercury (elemental)</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Oral (rat) LD50: >9.2 mg/kg <sup>[1]</sup>	Not Available
<b>lead</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	dermal (rat) LD50: >2000 mg/kg <sup>[1]</sup>	Not Available
	Inhalation (rat) LC50: >5.05 mg/l4 h <sup>[1]</sup>	
<b>mercury (elemental)</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Oral (rat) LD50: >9.2 mg/kg <sup>[1]</sup>	Not Available
<b>chromium</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Not Available	Not Available
<b>cadmium</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Inhalation (rat) LC50: 0.003125 mg/l/30m <sup>[2]</sup>	Not Available
	Oral (rat) LD50: >63-259 mg/kg <sup>[1]</sup>	

## Lithium-ion battery in equipment – Radii Xpert

**Legend:** 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.\* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

## ETHYLENE CARBONATE

The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

for ethylene carbonate

**Mammalian toxicity:** Reliable acute toxicity tests are available on ethylene carbonate. Ethylene carbonate is practically nontoxic following acute oral exposure in a test that meets OECD and EPA test guidelines; the LD50 is >5000 mg/kg. The dermal LD50 is >2000 mg/kg, in a test that meets OECD and EPA test guidelines.

Ethylene carbonate is rapidly metabolized to ethylene glycol. Following gavage administration to rats, ethylene carbonate is rapidly converted into ethylene glycol; the half-life for disappearance of ethylene carbonate from blood was 0.25 hours. As a result, the mammalian toxicity of ethylene carbonate is nearly identical to that of ethylene glycol for endpoints where both have been tested

Ethylene carbonate was mixed in the diet of 26 male and 26 female Crl: CD(SD) rats for 18 months at concentrations of 25,000 ppm for males and females and 50,000 ppm for females; males were also fed 50,000 ppm for 42 weeks, and 40,000 ppm for 16 weeks. Survivors were observed to 24 months. Compound intake (mg/kg/day) was not reported, but is estimated to be approximately 250 and 500 mg/kg/day. No toxic effects were found in females, but increased mortality was seen in males at both dose levels. No high-dose males survived week 60 and only 10 low-dose males survived to week 78. Males had severe nephrotoxicity, characteristic of ethylene glycol toxicity.

The following *in vitro* genotoxicity tests were conducted on ethylene carbonate, without indications of genotoxicity: an Ames mutagenicity assay, an unscheduled DNA synthesis assay using rat hepatocytes, and a cell transformation assay using BALB/3T3 cells. No *in vivo* genotoxicity studies on ethylene carbonate were found; however, ethylene glycol has been tested and was negative in a rat dominant lethal assay.

Gavage administration of ethylene carbonate to pregnant rats days 6-15 of gestation resulted in systemic toxicity at doses of 3000 mg/kg/day, including post-dose salivation. The NOAEL for maternal toxicity was 1500 mg/kg/day. Similar to ethylene glycol, there were increased soft tissue (hydrocephalus, umbilical herniation, gastroschisis, cleft palate, misshapen and compressed stomach) and skeletal malformations at 3000 mg/kg/day, but not at 1500 mg/kg/day.

For ethylene glycol:

Ethylene glycol is quickly and extensively absorbed through the gastrointestinal tract. Limited information suggests that it is also absorbed through the respiratory tract; dermal absorption is apparently slow. Following absorption, ethylene glycol is distributed throughout the body according to total body water. In most mammalian species, including humans, ethylene glycol is initially metabolised by alcohol.

dehydrogenase to form glycolaldehyde, which is rapidly converted to glycolic acid and glyoxal by aldehyde oxidase and aldehyde dehydrogenase. These metabolites are oxidised to glyoxylate; glyoxylate may be further metabolised to formic acid, oxalic acid, and glycine. Breakdown of both glycine and formic acid can generate CO<sub>2</sub>, which is one of the major elimination products of ethylene glycol. In addition to exhaled CO<sub>2</sub>, ethylene glycol is eliminated in the urine as both the parent compound and glycolic acid. Elimination of ethylene glycol from the plasma in both humans and laboratory animals is rapid after oral exposure; elimination half-lives are in the range of 1-4 hours in most species tested.

**Respiratory Effects.** Respiratory system involvement occurs 12-24 hours after ingestion of sufficient amounts of ethylene glycol and is considered to be part of a second stage in ethylene glycol poisoning. The symptoms include hyperventilation, shallow rapid breathing, and generalized pulmonary edema with calcium oxalate crystals occasionally present in the lung parenchyma. Respiratory system involvement appears to be dose-dependent and occurs concomitantly with cardiovascular changes. Pulmonary infiltrates and other changes compatible with adult respiratory distress syndrome (ARDS) may characterise the second stage of ethylene glycol poisoning. Pulmonary oedema can be secondary to cardiac failure, ARDS, or aspiration of gastric contents. Symptoms related to acidosis such as hyperpnea and tachypnea are frequently observed; however, major respiratory morbidities such as pulmonary edema and bronchopneumonia are relatively rare and usually only observed with extreme poisoning (e.g., in only 5 of 36 severely poisoned cases).

**Cardiovascular Effects.** Cardiovascular system involvement in humans occurs at the same time as respiratory system involvement, during the second phase of oral ethylene glycol poisoning, which is 12- 24 hours after acute exposure. The symptoms of cardiac involvement include tachycardia, ventricular gallop and cardiac enlargement. Ingestion of ethylene glycol may also cause hypertension or hypotension, which may progress to cardiogenic shock. Myocarditis has been observed at autopsy in cases of people who died following acute ingestion of ethylene glycol. As in the case of respiratory effects, cardiovascular involvement occurs with ingestion of relatively high doses of ethylene glycol.

Nevertheless, circulatory disturbances are a rare occurrence, having been reported in only 8 of 36 severely poisoned cases. Therefore, it appears that acute exposure to high levels of ethylene glycol can cause serious cardiovascular effects in humans. The effects of a long-term, low-dose exposure are unknown.

**Gastrointestinal Effects.** Nausea, vomiting with or without blood, pyrosis, and abdominal cramping and pain are common early effects of acute ethylene glycol ingestion. Acute effects of ethylene glycol ingestion in one patient included intermittent diarrhea and abdominal pain, which were attributed to mild colonic ischaemia; severe abdominal pain secondary to colonic stricture and perforation developed 3 months after ingestion, and histology of the resected colon showed birefringent crystals highly suggestive of oxalate deposition.

**Musculoskeletal Effects.** Reported musculoskeletal effects in cases of acute ethylene glycol poisoning have included diffuse muscle tenderness and myalgias associated with elevated serum creatinine phosphokinase levels, and myoclonic jerks and tetanic contractions associated with hypocalcaemia.

**Hepatic Effects.** Central hydropic or fatty degeneration, parenchymal necrosis, and calcium oxalate crystals in the liver have been observed at autopsy in cases of people who died following acute ingestion of ethylene glycol.

**Renal Effects.** Adverse renal effects after ethylene glycol ingestion in humans can be observed during the third stage of ethylene glycol toxicity 24-72 hours after acute exposure. The hallmark of renal toxicity is the presence of birefringent calcium oxalate monohydrate crystals deposited in renal tubules and their presence in urine after ingestion of relatively high amounts of ethylene glycol. Other signs of nephrotoxicity can include tubular cell degeneration and necrosis and tubular interstitial inflammation. If untreated, the degree of renal damage caused by high doses of ethylene glycol progresses and leads to haematuria, proteinuria, decreased renal function, oliguria, anuria, and ultimately renal failure. These changes in the kidney are linked to acute tubular necrosis but normal or near normal renal function can return with adequate supportive therapy.

**Metabolic Effects.** One of the major adverse effects following acute oral exposure of humans to ethylene glycol involves metabolic changes. These changes occur as early as 12 hours after ethylene glycol exposure. Ethylene glycol intoxication is accompanied by metabolic acidosis which is manifested by decreased pH and bicarbonate content of serum and other bodily fluids caused by accumulation of excess glycolic acid. Other characteristic metabolic effects of ethylene glycol poisoning are increased serum anion gap, increased osmolal gap, and hypocalcaemia. Serum anion gap is calculated from concentrations of sodium, chloride, and bicarbonate, is normally 12-16 mM, and is typically elevated after ethylene glycol ingestion due to increases in unmeasured metabolite anions (mainly glycolate).

**Neurological Effects:** Adverse neurological reactions are among the first symptoms to appear in humans after ethylene glycol ingestion. These early neurotoxic effects are also the only symptoms attributed to unmetabolised ethylene glycol. Together with metabolic changes, they occur during the period of 30 minutes to 12 hours after exposure and are considered to be part of the first stage in ethylene glycol intoxication. In cases of acute intoxication, in which a large amount of ethylene glycol is ingested over a very short time period, there is a progression of neurological manifestations which, if not treated, may lead to generalized seizures and coma. Ataxia, slurred speech, confusion, and somnolence are common during the initial phase of ethylene glycol intoxication as are irritation, restlessness, and disorientation. Cerebral edema and crystalline deposits of calcium oxalate in the walls of small blood vessels in the brain were found at autopsy in people who died after acute ethylene glycol ingestion.

Effects on cranial nerves appear late (generally 5-20 days post-ingestion), are relatively rare, and according to some investigators constitute a fourth, late cerebral phase in ethylene glycol intoxication. Clinical manifestations of the cranial neuropathy commonly involve lower motor neurons of the facial and bulbar nerves and are reversible over many months.

**Reproductive Effects:** Reproductive function after intermediate-duration oral exposure to ethylene glycol has been tested in three multi-generation studies (one in rats and two in mice) and several shorter studies (15-20 days in rats and mice). In these studies, effects on fertility, foetal viability, and male reproductive organs were observed in mice, while the only effect in rats was an increase in gestational duration.

**Developmental Effects:** The developmental toxicity of ethylene glycol has been assessed in several acute-duration studies using mice, rats, and rabbits.



## Lithium-ion battery in equipment – Radii Xpert

	<p>Available studies indicate that malformations, especially skeletal malformations occur in both mice and rats exposed during gestation; mice are apparently more sensitive to the developmental effects of ethylene glycol. Other evidence of embryotoxicity in laboratory animals exposed to ethylene glycol exposure includes reduction in foetal body weight.</p> <p><b>Cancer:</b> No studies were located regarding cancer effects in humans or animals after dermal exposure to ethylene glycol.</p> <p><b>Genotoxic Effects:</b> Studies in humans have not addressed the genotoxic effects of ethylene glycol. However, available <i>in vivo</i> and <i>in vitro</i> laboratory studies provide consistently negative genotoxicity results for ethylene glycol.</p>		
CHROMIUM	<p>For chrome(III) and other valence states (except hexavalent):</p> <p>For inhalation exposure, all trivalent and other chromium compounds are treated as particulates, not gases.</p> <p>The mechanisms of chromium toxicity are very complex, and although many studies on chromium are available, there is a great deal of uncertainty about how chromium exerts its toxic influence. Much more is known about the mechanisms of hexavalent chromium toxicity than trivalent chromium toxicity. There is an abundance of information available on the carcinogenic potential of chromium compounds and on the genotoxicity and mutagenicity of chromium compounds in experimental systems. The consensus from various reviews and agencies is that evidence of carcinogenicity of elemental, divalent, or trivalent chromium compounds is lacking. Epidemiological studies of workers in a number of industries (chromate production, chromate pigment production and use, and chrome plating) conclude that while occupational exposure to hexavalent chromium compounds is associated with an increased risk of respiratory system cancers (primarily bronchogenic and nasal), results from occupational exposure studies to mixtures that were mainly elemental and trivalent (ferrochromium alloy worker) were inconclusive. Studies in leather tanners, who were exposed to trivalent chromium were consistently negative. In addition to the lack of direct evidence of carcinogenicity of trivalent or elemental chromium and its compounds, the genotoxic evidence is overwhelmingly negative.</p> <p>The lesser potency of trivalent chromium relative to hexavalent chromium is likely related to the higher redox potential of hexavalent chromium and its greater ability to enter cells.</p> <p>The general inability of trivalent chromium to traverse membranes and thus be absorbed or reach peripheral tissue in significant amounts is generally accepted as a probable explanation for the overall absence of systemic trivalent chromium toxicity. Elemental and divalent forms of chromium are not able to traverse membranes readily either. This is not to say that elemental, divalent, or trivalent chromium compounds cannot traverse membranes and reach peripheral tissue, the mechanism of absorption is simply less efficient in comparison to absorption of hexavalent chromium compounds. Hexavalent chromium compounds exist as tetrahedral chromate anions, resembling the forms of other natural anions like sulfate and phosphate which are permeable across nonselective membranes. Trivalent chromium forms octahedral complexes which cannot easily enter through these channels, instead being absorbed via passive diffusion and phagocytosis. Although trivalent chromium is less well absorbed than hexavalent chromium, workers exposed to trivalent compounds have had detectable levels of chromium in the urine at the end of a workday. Absorbed chromium is widely distributed throughout the body via the bloodstream, and can reach the foetus. Although there is ample <i>in vivo</i> evidence that hexavalent chromium is efficiently reduced to trivalent chromium in the gastrointestinal tract and can be reduced to the trivalent form by ascorbate and glutathione in the lungs, there is no evidence that trivalent chromium is converted to hexavalent chromium in biological systems. In general, trivalent chromium compounds are cleared rapidly from the blood and more slowly from the tissues. Although not fully characterized, the biologically active trivalent chromium molecule appears to be chromodulin, also referred to as (GTF). Chromodulin is an oligopeptide complex containing four chromic ions. Chromodulin may facilitate interactions of insulin with its receptor site, influencing protein, glucose, and lipid metabolism. Inorganic trivalent chromium compounds, which do not appear to have insulin-potentiating properties, are capable of being converted into biologically active forms by humans and animals.</p> <p>Chromium can be a potent sensitiser in a small minority of humans, both from dermal and inhalation exposures.</p> <p>The most sensitive endpoint identified in animal studies of acute exposure to trivalent chromium appears to involve the respiratory system. Specifically, acute exposure to trivalent chromium is associated with impaired lung function and lung damage.</p> <p>Based on what is known about absorption of chromium in the human body, its potential mechanism of action in cells, and occupational data indicating that valence states other than hexavalent exhibit a relative lack of toxicity the toxicity of elemental and divalent chromium compounds is expected to be similar to or less than common trivalent forms.</p> <p>The substance is classified by IARC as Group 3:  <b>NOT</b> classifiable as to its carcinogenicity to humans.  Evidence of carcinogenicity may be inadequate or limited in animal testing.  Tenth Annual Report on Carcinogens: Substance known to be Carcinogenic  [<i>National Toxicology Program: U.S. Dep. of Health and Human Services 2002</i>]  Gastrointestinal tumours, lymphoma, musculoskeletal tumours and tumours at site of application recorded.</p>		
BISPHENOL A/ PHOSGENE POLYMER	<p>The chemical structure of hydroxylated diphenylalkanes or bisphenols consists of two phenolic rings joined together through a bridging carbon. This class of endocrine disruptors that mimic oestrogens is widely used in industry, particularly in plastics.</p> <p>Bisphenol A (BPA) and some related compounds exhibit oestrogenic activity in human breast cancer cell line MCF-7, but there were remarkable differences in activity. Several derivatives of BPA exhibited significant thyroid hormonal activity towards rat pituitary cell line GH3, which releases growth hormone in a thyroid hormone-dependent manner. However, BPA and several other derivatives did not show such activity. Results suggest that the 4-hydroxyl group of the A-phenyl ring and the B-phenyl ring of BPA derivatives are required for these hormonal activities, and substituents at the 3,5-positions of the phenyl rings and the bridging alkyl moiety markedly influence the activities.</p> <p>Bisphenols promoted cell proliferation and increased the synthesis and secretion of cell type-specific proteins. When ranked by proliferative potency, the longer the alkyl substituent at the bridging carbon, the lower the concentration needed for maximal cell yield; the most active compound contained two propyl chains at the bridging carbon. Bisphenols with two hydroxyl groups in the para position and an angular configuration are suitable for appropriate hydrogen bonding to the acceptor site of the oestrogen receptor.</p>		
LITHIUM COBALTATE & LITHIUM FLUOROPHOSPHATE & GRAPHITE & CHROMIUM & BISPHENOL A/ PHOSGENE POLYMER	No significant acute toxicological data identified in literature search.		
LITHIUM FLUOROPHOSPHATE & ETHYLENE CARBONATE & GRAPHITE & MERCURY (ELEMENTAL)	<p>Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.</p>		
LEAD	WARNING: Lead is a cumulative poison and has the potential to cause		
LEAD	abortion and intellectual impairment to unborn children of		
LEAD	pregnant workers.		
MERCURY (ELEMENTAL)	Animal studies have shown that mercury may be a reproductive effector.		
Acute Toxicity	☹	Carcinogenicity	☹
Skin Irritation/Corrosion	☹	Reproductivity	☹
Serious Eye Damage/Irritation	☹	STOT - Single Exposure	☹

## Lithium-ion battery in equipment – Radii Xpert

Respiratory or Skin sensitisation	⊘	STOT - Repeated Exposure	⊘
Mutagenicity	⊘	Aspiration Hazard	⊘

Legend: ✘ – Data available but does not fill the criteria for classification  
✔ – Data available to make classification  
⊘ – Data Not Available to make classification

## SECTION 12 ECOLOGICAL INFORMATION

## 12.1. Toxicity

Lithium-ion battery in equipment – Radii Xpert	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available

lithium cobaltate	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	1.406mg/L	2
	EC50	48	Crustacea	2.618mg/L	2
	EC50	72	Algae or other aquatic plants	0.144mg/L	2
	NOEC	168	Algae or other aquatic plants	0.0018mg/L	2

lithium fluorophosphate	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	42mg/L	2
NOEC	168	Crustacea	2.55mg/L	2	

ethylene carbonate	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	49000mg/L	2

graphite	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available

lead	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.0079mg/L	2
	EC50	48	Crustacea	0.029mg/L	2
	EC50	72	Algae or other aquatic plants	0.0205mg/L	2
	BCFD	8	Fish	4.324mg/L	4
NOEC	672	Fish	0.00003mg/L	4	

mercury (elemental)	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.004mg/L	4
	EC50	48	Crustacea	0.0035mg/L	5
	EC50	72	Algae or other aquatic plants	0.0025mg/L	4
	BCF	720	Fish	0.001mg/L	4
NOEC	2688	Crustacea	0.00025mg/L	2	

lead	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.0079mg/L	2
	EC50	48	Crustacea	0.029mg/L	2
	EC50	72	Algae or other aquatic plants	0.0205mg/L	2
	BCFD	8	Fish	4.324mg/L	4
NOEC	672	Fish	0.00003mg/L	4	

mercury (elemental)	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.004mg/L	4
	EC50	48	Crustacea	0.0035mg/L	5
	EC50	72	Algae or other aquatic plants	0.0025mg/L	4
	BCF	720	Fish	0.001mg/L	4
NOEC	2688	Crustacea	0.00025mg/L	2	

chromium	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	13.9mg/L	4
	EC50	48	Crustacea	0.0225mg/L	5
EC50	72	Algae or other aquatic plants	0.104mg/L	4	

Continued...

## Lithium-ion battery in equipment – Radii Xpert

	BCF	1440	Algae or other aquatic plants	0.0495mg/L	4
	NOEC	672	Fish	0.00019mg/L	4
cadmium	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.001mg/L	4
	EC50	48	Crustacea	0.0033mg/L	5
	EC50	72	Algae or other aquatic plants	0.018mg/L	2
	BCF	960	Fish	500mg/L	4
	NOEC	168	Fish	0.00001821mg/L	4
bisphenol A/ phosgene polymer	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	Not Available	Not Available	Not Available	Not Available	Not Available

**Legend:**

Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data

**DO NOT** discharge into sewer or waterways.

**12.2. Persistence and degradability**

Ingredient	Persistence: Water/Soil	Persistence: Air
ethylene carbonate	HIGH	HIGH

**12.3. Bioaccumulative potential**

Ingredient	Bioaccumulation
ethylene carbonate	LOW (LogKOW = -0.3388)

**12.4. Mobility in soil**

Ingredient	Mobility
ethylene carbonate	LOW (KOC = 9.168)

**12.5. Results of PBT and vPvB assessment**

	P	B	T
Relevant available data	Not Available	Not Available	Not Available
PBT Criteria fulfilled?	Not Available	Not Available	Not Available

**12.6. Other adverse effects**

No data available

**SECTION 13 DISPOSAL CONSIDERATIONS****13.1. Waste treatment methods**

Product / Packaging disposal	Consult State Land Waste Management Authority for disposal. Bury residue in an authorised landfill.
Waste treatment options	Not Available
Sewage disposal options	Not Available

**SECTION 14 TRANSPORT INFORMATION****Labels Required**

	
Marine Pollutant	NO

**Land transport (ADR)**

14.1.UN number	3481
14.2.UN proper shipping name	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)
14.3. Transport hazard class(es)	Class : 9
	Subrisk : Not Applicable

Continued...

## Lithium-ion battery in equipment – Radii Xpert

## Air transport (ICAO-IATA / DGR)

14.1. UN number	3481	
14.2. UN proper shipping name	Lithium ion batteries contained in equipment (including lithium ion polymer batteries); Lithium ion batteries packed with equipment (including lithium ion polymer batteries)	
14.3. Transport hazard class(es)	ICAO/IATA Class	9
	ICAO / IATA Subrisk	Not Applicable
	ERG Code	9F
14.4. Packing group	Not Applicable	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	Special provisions	A48 A88 A99 A154 A164 A181 A185 A206; A88 A99 A154 A164 A181 A185 A206
	Cargo Only Packing Instructions	967; 966
	Cargo Only Maximum Qty / Pack	35 kg
	Passenger and Cargo Packing Instructions	967; 966
	Passenger and Cargo Maximum Qty / Pack	5 kg
	Passenger and Cargo Limited Quantity Packing Instructions	Forbidden
	Passenger and Cargo Limited Maximum Qty / Pack	Forbidden

## Sea transport (IMDG-Code / GGVSee)

14.1. UN number	3481	
14.2. UN proper shipping name	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	
14.3. Transport hazard class(es)	IMDG Class	9
	IMDG Subrisk	Not Applicable
14.4. Packing group	Not Applicable	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	EMS Number	F-A , S-I
	Special provisions	188 230 310 348 360 376 377 384
	Limited Quantities	0

## Inland waterways transport (ADN)

14.1. UN number	3481	
14.2. UN proper shipping name	LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)	
14.3. Transport hazard class(es)	9	Not Applicable
14.4. Packing group	Not Applicable	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	Classification code	M4
	Special provisions	188; 230; 310; 348; 360; 376; 377; 636
	Limited quantity	0
	Equipment required	PP
	Fire cones number	0

## 14.7. Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

## SECTION 15 REGULATORY INFORMATION

## 15.1. Safety, health and environmental regulations / legislation specific for the substance or mixture

## LITHIUM COBALTE(12190-79-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

European Customs Inventory of Chemical Substances ECICS (English)	Ireland Occupational Exposure Limits
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)	Ireland Occupational Exposure Limits - Intended Changes
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs	

## LITHIUM FLUOROPHOSPHATE(21324-40-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

European Customs Inventory of Chemical Substances ECICS (English)	European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)
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## ETHYLENE CARBONATE(96-49-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Continued...

## Lithium-ion battery in equipment – Radii Xpert

EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances  
European Customs Inventory of Chemical Substances ECICS (English)

European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

**GRAPHITE(7782-42-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances  
European Customs Inventory of Chemical Substances ECICS (English)

European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

**LEAD(7439-92-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles  
Europe AeroSpace and Defence Industries Association of Europe (ASD) REACH Implementation Working Group Priority Declarable Substances List (PDSL)  
European Customs Inventory of Chemical Substances ECICS (English)  
European Trade Union Confederation (ETUC) Priority List for REACH Authorisation  
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

European Union (EU) Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work - Annex I: List of Binding Occupational Exposure Limit Values (English)  
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI  
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs  
Ireland Occupational Exposure Limits

**MERCURY (ELEMENTAL)(7439-97-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles  
EU REACH Regulation (EC) No 1907/2006 - Annex XVII (Appendix 6) Toxic to reproduction: category 1B (Table 3.1)/category 2 (Table 3.2)  
European Customs Inventory of Chemical Substances ECICS (English)  
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI  
European Union (EU) Third List of Indicative Occupational Exposure Limit Values (IOELVs) (English)  
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs  
Ireland Occupational Exposure Limits

**LEAD(7439-92-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles  
Europe AeroSpace and Defence Industries Association of Europe (ASD) REACH Implementation Working Group Priority Declarable Substances List (PDSL)  
European Customs Inventory of Chemical Substances ECICS (English)  
European Trade Union Confederation (ETUC) Priority List for REACH Authorisation  
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

European Union (EU) Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work - Annex I: List of Binding Occupational Exposure Limit Values (English)  
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI  
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs  
Ireland Occupational Exposure Limits

**MERCURY (ELEMENTAL)(7439-97-6) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles  
EU REACH Regulation (EC) No 1907/2006 - Annex XVII (Appendix 6) Toxic to reproduction: category 1B (Table 3.1)/category 2 (Table 3.2)  
European Customs Inventory of Chemical Substances ECICS (English)  
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI  
European Union (EU) Third List of Indicative Occupational Exposure Limit Values (IOELVs) (English)  
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs  
Ireland Occupational Exposure Limits

**CHROMIUM(7440-47-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)  
European Customs Inventory of Chemical Substances ECICS (English)  
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)

European Union (EU) Commission Directive 2006/15/EC establishing a second list of indicative occupational exposure limit values (IOELVs) (Spanish)  
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs  
Ireland Occupational Exposure Limits

**CADMIUM(7440-43-9) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

EU REACH Regulation (EC) No 1907/2006 - Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles  
EU REACH Regulation (EC) No 1907/2006 - Annex XVII (Appendix 2) Carcinogens: category 1B (Table 3.1)/category 2 (Table 3.2)  
EU REACH Regulation (EC) No 1907/2006 - Proposals to identify Substances of Very High Concern: Annex XV reports for commenting by Interested Parties  
Europe AeroSpace and Defence Industries Association of Europe (ASD) REACH Implementation Working Group Priority Declarable Substances List (PDSL)  
European Customs Inventory of Chemical Substances ECICS (English)  
European Trade Union Confederation (ETUC) Priority List for REACH Authorisation

European Union - European Inventory of Existing Commercial Chemical Substances (EINECS) (English)  
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI  
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs  
Ireland Occupational Exposure Limits  
Ireland Occupational Exposure Limits - Intended Changes

**BISPHENOL A/ PHOSGENE POLYMER(25971-63-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS**

European Customs Inventory of Chemical Substances ECICS (English)

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : 98/24/EC, 92/85/EC, 94/33/EC, 91/689/EEC, 1999/13/EC, Commission Regulation (EU) 2015/830, Regulation (EC) No 1272/2008 and their amendments

**15.2. Chemical safety assessment**

For further information please look at the Chemical Safety Assessment and Exposure Scenarios prepared by your Supply Chain if available.

**ECHA SUMMARY**

Ingredient	CAS number	Index No	ECHA Dossier
lithium cobaltate	12190-79-3	Not Available	Not Available
Harmonisation (C&L)	Hazard Class and Category Code(s)		Pictograms Signal Word
			Hazard Statement Code(s)

Continued...

## Lithium-ion battery in equipment – Radii Xpert

Inventory)		Code(s)	
1	Skin Sens. 1; Carc. 1B	GHS08; Dgr	H317; H350
2	Repr. 2; Skin Sens. 1; Carc. 1B; Acute Tox. 4; Aquatic Chronic 3; Resp. Sens. 1; Carc. 2	GHS08; Dgr	H361; H317; H350; H302; H412; H334

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
lithium fluorophosphate	21324-40-3	Not Available	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Acute Tox. 3; Skin Corr. 1A; Eye Dam. 1; STOT RE 1	GHS08; GHS05; GHS06; Dgr	H301; H314; H318; H372
2	Acute Tox. 3; Skin Corr. 1A; Eye Dam. 1; STOT RE 1; Skin Corr. 1B; Acute Tox. 4; Met. Corr. 1	GHS08; GHS05; GHS06; Dgr	H301; H314; H372; H318; H311; H290; H331

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
ethylene carbonate	96-49-1	Not Available	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
2	Acute Tox. 4; Eye Irrit. 2; STOT RE 2; STOT SE 3; Skin Irrit. 2; Eye Dam. 1	GHS08; Dgr; GHS05	H302; H373; H335; H315; H318

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
graphite	7782-42-5	Not Available	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Not Classified	Not Available	Not Available
2	Eye Irrit. 2; STOT SE 3; Skin Irrit. 2; STOT RE 1; Acute Tox. 4; STOT RE 2; Flam. Sol. 2	GHS08; Dgr; GHS02	H335; H315; H318; H372; H228; H302

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
lead	7439-92-1	082-013-00-1 082-014-00-7	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
2	Repr. 1A; Lact.; STOT RE 1; Aquatic Chronic 2; Aquatic Acute 1; Aquatic Chronic 1; Acute Tox. 4; STOT RE 2; Muta. 2; Carc. 2; Aquatic Chronic 4; Repr. 1B; Repr. 2; Acute Tox. 3; STOT SE 2; Skin Irrit. 2; Eye Dam. 1	GHS08; Dgr; GHS09; GHS02; GHS03; GHS05; GHS06	H360FD; H362; H372; H410; H400; H341; H351; H311; H315; H331; H301; H371; H318
2	Repr. 1A; Lact.; STOT RE 1; Aquatic Chronic 2; Aquatic Acute 1; Aquatic Chronic 1; Acute Tox. 4; STOT RE 2; Muta. 2; Carc. 2; Aquatic Chronic 4; Repr. 1B; Repr. 2; Acute Tox. 3; STOT SE 2; Skin Irrit. 2; Eye Dam. 1	GHS08; Dgr; GHS09; GHS02; GHS03; GHS05; GHS06	H360FD; H362; H372; H410; H400; H341; H351; H311; H315; H331; H301; H371; H318
1	Acute Tox. 4; Acute Tox. 4; Carc. 2; Repr. 1A; STOT RE 1; Aquatic Chronic 3	GHS08; Dgr	H302; H332; H351; H360; H372; H412
2	Acute Tox. 4; Carc. 2; Repr. 1A; STOT RE 1; Aquatic Chronic 3; STOT RE 2; Aquatic Acute 1; Aquatic Chronic 2	GHS08; Dgr; GHS09	H302; H332; H351; H360; H372; H412; H400
1	Skin Irrit. 2; Eye Irrit. 2	GHS07; Wng	H315; H319
2	Skin Irrit. 2; Eye Irrit. 2	GHS07; Wng	H315; H319

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
mercury (elemental)	7439-97-6	080-001-00-0	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
2	Acute Tox. 2; Repr. 1B; STOT RE 1; Aquatic Chronic 1; Met. Corr. 1; Acute Tox. 1; Aquatic Acute 1; Acute Tox. 3; STOT RE 2; Repr. 1A; Skin Sens. 1; Muta. 2; STOT SE 1	GHS09; GHS08; GHS06; Dgr; GHS05	H330; H372; H410; H290; H400; H360D; H300; H311; H250; H317; H341; H371
1	Ox. Sol. 2; Acute Tox. 3; Acute Tox. 4; Skin Corr. 1B; Skin Sens. 1; Acute Tox. 2; Resp. Sens. 1; Muta. 1B; Carc. 1B; Repr. 1B; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1	GHS03; GHS09; GHS08; GHS05; GHS06; Dgr	H272; H301; H312; H314; H317; H330; H334; H340; H350; H360; H372; H410
2	Ox. Sol. 2; Acute Tox. 3; Acute Tox. 4; Skin Corr. 1B; Skin Sens. 1; Acute Tox. 2; Resp. Sens. 1; Muta. 1B; Carc. 1B; Repr. 1B; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1	GHS03; GHS09; GHS08; GHS05; GHS06; Dgr	H272; H301; H312; H314; H317; H330; H334; H340; H350; H360; H372; H410
1	Ox. Sol. 2; Acute Tox. 4; Aquatic Acute 1; Aquatic Chronic 1	GHS03; GHS09; GHS07; Dgr	H272; H302; H400; H410
2	Ox. Sol. 2; Acute Tox. 4; Aquatic Acute 1; Aquatic Chronic 1	GHS03; GHS09; GHS07; Dgr	H272; H302; H400; H410

## Lithium-ion battery in equipment – Radii Xpert

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
lead	7439-92-1	082-013-00-1 082-014-00-7	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
2	Repr. 1A; Lact.; STOT RE 1; Aquatic Chronic 2; Aquatic Acute 1; Aquatic Chronic 1; Acute Tox. 4; STOT RE 2; Muta. 2; Carc. 2; Aquatic Chronic 4; Repr. 1B; Repr. 2; Acute Tox. 3; STOT SE 2; Skin Irrit. 2; Eye Dam. 1	GHS08; Dgr; GHS09; GHS02; GHS03; GHS05; GHS06	H360FD; H362; H372; H410; H400; H341; H351; H311; H315; H331; H301; H371; H318
2	Repr. 1A; Lact.; STOT RE 1; Aquatic Chronic 2; Aquatic Acute 1; Aquatic Chronic 1; Acute Tox. 4; STOT RE 2; Muta. 2; Carc. 2; Aquatic Chronic 4; Repr. 1B; Repr. 2; Acute Tox. 3; STOT SE 2; Skin Irrit. 2; Eye Dam. 1	GHS08; Dgr; GHS09; GHS02; GHS03; GHS05; GHS06	H360FD; H362; H372; H410; H400; H341; H351; H311; H315; H331; H301; H371; H318
1	Acute Tox. 4; Acute Tox. 4; Carc. 2; Repr. 1A; STOT RE 1; Aquatic Chronic 3	GHS08; Dgr	H302; H332; H351; H360; H372; H412
2	Acute Tox. 4; Carc. 2; Repr. 1A; STOT RE 1; Aquatic Chronic 3; STOT RE 2; Aquatic Acute 1; Aquatic Chronic 2	GHS08; Dgr; GHS09	H302; H332; H351; H360; H372; H412; H400
1	Skin Irrit. 2; Eye Irrit. 2	GHS07; Wng	H315; H319
2	Skin Irrit. 2; Eye Irrit. 2	GHS07; Wng	H315; H319

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
mercury (elemental)	7439-97-6	080-001-00-0	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
2	Acute Tox. 2; Repr. 1B; STOT RE 1; Aquatic Chronic 1; Met. Corr. 1; Acute Tox. 1; Aquatic Acute 1; Acute Tox. 3; STOT RE 2; Repr. 1A; Skin Sens. 1; Muta. 2; STOT SE 1	GHS09; GHS08; GHS06; Dgr; GHS05	H330; H372; H410; H290; H400; H360D; H300; H311; H250; H317; H341; H371
1	Ox. Sol. 2; Acute Tox. 3; Acute Tox. 4; Skin Corr. 1B; Skin Sens. 1; Acute Tox. 2; Resp. Sens. 1; Muta. 1B; Carc. 1B; Repr. 1B; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1	GHS03; GHS09; GHS08; GHS05; GHS06; Dgr	H272; H301; H312; H314; H317; H330; H334; H340; H350; H360; H372; H410
2	Ox. Sol. 2; Acute Tox. 3; Acute Tox. 4; Skin Corr. 1B; Skin Sens. 1; Acute Tox. 2; Resp. Sens. 1; Muta. 1B; Carc. 1B; Repr. 1B; STOT RE 1; Aquatic Acute 1; Aquatic Chronic 1	GHS03; GHS09; GHS08; GHS05; GHS06; Dgr	H272; H301; H312; H314; H317; H330; H334; H340; H350; H360; H372; H410
1	Ox. Sol. 2; Acute Tox. 4; Aquatic Acute 1; Aquatic Chronic 1	GHS03; GHS09; GHS07; Dgr	H272; H302; H400; H410
2	Ox. Sol. 2; Acute Tox. 4; Aquatic Acute 1; Aquatic Chronic 1	GHS03; GHS09; GHS07; Dgr	H272; H302; H400; H410

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
chromium	7440-47-3	Not Available	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Not Classified	Not Available	Not Available
2	Eye Irrit. 2; Skin Sens. 1; Resp. Sens. 1; Aquatic Acute 1; Aquatic Chronic 1; Aquatic Chronic 4; STOT SE 2; Ox. Liq. 2; Skin Irrit. 2; Flam. Sol. 1; Carc. 2; Flam. Sol. 2; Muta. 2; STOT SE 3; Carc. 1B; STOT RE 2	GHS08; Dgr; GHS09; GHS02; GHS03	H319; H317; H334; H400; H410; H228; H371; H272; H315; H341; H335; H350
1	Skin Corr. 1B	GHS05; Dgr	H314
2	Skin Corr. 1B	GHS05; Dgr	H314
1	Skin Corr. 1B	GHS05; Dgr	H314
2	Skin Corr. 1B	GHS05; Dgr	H314
1	Skin Corr. 1B	GHS05; Dgr	H314
2	Skin Corr. 1B	GHS05; Dgr	H314

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
cadmium	7440-43-9	048-002-00-0 048-011-00-X	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
2	Aquatic Acute 1; Aquatic Chronic 1; Acute Tox. 2; Muta. 2; Carc. 1B; Repr. 2; STOT RE 1; Pyr. Sol. 1; STOT SE 3; Acute Tox. 3	GHS09; GHS08; GHS06; Dgr; GHS02	H400; H410; H330; H341; H350; H361fd; H372; H250; H335; H301
2	Aquatic Acute 1; Aquatic Chronic 1; Acute Tox. 2; Muta. 2; Carc. 1B; Repr. 2; STOT RE 1; Pyr. Sol. 1; STOT SE 3; Acute Tox. 3	GHS09; GHS08; GHS06; Dgr; GHS02	H400; H410; H330; H341; H350; H361fd; H372; H250; H335; H301
1	Skin Irrit. 2; Eye Irrit. 2; Carc. 1B	GHS08; Dgr	H315; H319; H350
2	Skin Irrit. 2; Eye Irrit. 2; Carc. 1B; Skin Corr. 1B; Acute Tox. 4	GHS08; Dgr; GHS05	H319; H350; H314; H332
1	Carc. 1B	GHS08; Dgr	H350

## Lithium-ion battery in equipment – Raddi Xpert

2	Carc. 1B	GHS08; Dgr	H350
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Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

Ingredient	CAS number	Index No	ECHA Dossier
bisphenol A/ phosgene polymer	25971-63-5	Not Available	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Skin Irrit. 2; Eye Irrit. 2	GHS07; Wng	H315; H319
2	Skin Irrit. 2; Eye Irrit. 2	GHS07; Wng	H315; H319

Harmonisation Code 1 = The most prevalent classification. Harmonisation Code 2 = The most severe classification.

National Inventory	Status
Australia - AICS	Y
Canada - DSL	N (lithium fluorophosphate)
Canada - NDSL	N (lead; graphite; bisphenol A/ phosgene polymer; ethylene carbonate; mercury (elemental); lithium cobaltate; chromium; cadmium)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	N (bisphenol A/ phosgene polymer)
Japan - ENCS	N (lead; graphite; bisphenol A/ phosgene polymer; mercury (elemental); chromium; lithium fluorophosphate; cadmium)
Korea - KECI	Y
New Zealand - NZIoC	N (lithium fluorophosphate)
Philippines - PICCS	N (lithium cobaltate)
USA - TSCA	Y
<b>Legend:</b>	Y = All ingredients are on the inventory N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing (see specific ingredients in brackets)

## SECTION 16 OTHER INFORMATION

## Full text Risk and Hazard codes

<b>AUH019</b>	May form explosive peroxides.
<b>H228</b>	Flammable solid.
<b>H250</b>	Catches fire spontaneously if exposed to air.
<b>H272</b>	May intensify fire; oxidiser.
<b>H290</b>	May be corrosive to metals.
<b>H300</b>	Fatal if swallowed.
<b>H301</b>	Toxic if swallowed.
<b>H302</b>	Harmful if swallowed.
<b>H310</b>	Fatal in contact with skin.
<b>H311</b>	Toxic in contact with skin.
<b>H312</b>	Harmful in contact with skin.
<b>H314</b>	Causes severe skin burns and eye damage.
<b>H315</b>	Causes skin irritation.
<b>H317</b>	May cause an allergic skin reaction.
<b>H318</b>	Causes serious eye damage.
<b>H319</b>	Causes serious eye irritation.
<b>H330</b>	Fatal if inhaled.
<b>H331</b>	Toxic if inhaled.
<b>H332</b>	Harmful if inhaled.
<b>H334</b>	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
<b>H335</b>	May cause respiratory irritation.
<b>H340</b>	May cause genetic defects.
<b>H341</b>	Suspected of causing genetic defects.
<b>H350</b>	May cause cancer.
<b>H351</b>	Suspected of causing cancer.
<b>H360</b>	May damage fertility or the unborn child.
<b>H360D</b>	May damage the unborn child.
<b>H360Df</b>	May damage the unborn child. Suspected of damaging fertility.
<b>H360FD</b>	May damage fertility. May damage the unborn child.
<b>H361</b>	Suspected of damaging fertility or the unborn child.
<b>H361fd</b>	Suspected of damaging fertility. Suspected of damaging the unborn child.
<b>H362</b>	May cause harm to breast-fed children.



## Lithium-ion battery in equipment – Radii Xpert

<b>H371</b>	May cause damage to organs.
<b>H372</b>	Causes damage to organs through prolonged or repeated exposure.
<b>H373</b>	May cause damage to organs through prolonged or repeated exposure.
<b>H400</b>	Very toxic to aquatic life.
<b>H402</b>	Harmful to aquatic life.
<b>H410</b>	Very toxic to aquatic life with long lasting effects.
<b>H412</b>	Harmful to aquatic life with long lasting effects.
<b>Not Available</b>	Not Available

**Other information**

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by SDI Limited using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:

EN 166 Personal eye-protection

EN 340 Protective clothing

EN 374 Protective gloves against chemicals and micro-organisms

EN 13832 Footwear protecting against chemicals

EN 133 Respiratory protective devices

**Definitions and abbreviations**

PC – TWA: Permissible Concentration-Time Weighted Average

PC – STEL: Permissible Concentration-Short Term Exposure Limit

IARC: International Agency for Research on Cancer

ACGIH: American Conference of Governmental Industrial Hygienists

STEL: Short Term Exposure Limit

TEEL: Temporary Emergency Exposure Limit,

IDLH: Immediately Dangerous to Life or Health Concentrations

OSF: Odour Safety Factor

NOAEL :No Observed Adverse Effect Level

LOAEL: Lowest Observed Adverse Effect Level

TLV: Threshold Limit Value

LOD: Limit Of Detection

OTV: Odour Threshold Value

BCF: BioConcentration Factors

BEI: Biological Exposure Index

The information contained in the Safety Data Sheet is based on data considered to be accurate, however, no warranty is expressed or implied regarding the accuracy of the data or the results to be obtained from the use thereof.

**Other information:**

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