1. Identification of Substance & Company

Product

Product name	CR AH-R Lithium metal cell
HSNO approval	exempt - manufactured article
Approval description	exempt - manufactured article
UN number	NA
DG class	NA
Proper Shipping Name	NA
Packaging group	NA
Hazchem code	NA
Uses	Lithium Metal Cell

Company Details

Company	**Transpecs New Zealand**	
Address	Cnr Ash & Kerrs Road, Wiri, Auckland 2241	PO Box 98971 Manukau City 2241
Telephone	+64 9 980 7300	
Website	www.transpecs.co.nz	

Emergency Telephone Number: 0800 764 766

2. Hazard Identification

New Zealand Approval

Manufactured article: Batteries are considered to be manufactured articles and are not, therefore, covered by the HSNO Act. The battery is sealed hermetically. Thus, the ingredients have no hazard potential, except the battery is violated or dismantled.
The following classification and hazards are associated with the contents of an open battery.

GHS 7 Classes	Hazard Statements
Solid dangerous when wet category 2	H260 - In contact with water releases flammable gases which may ignite spontaneously.
Acute toxicity category 4 (oral)	H302 - Harmful if swallowed.
Acute toxicity category 4 (inhalation)	H332 - Harmful if inhaled.
Skin corrosive category 1C	H314 - Causes severe skin burns and eye damage.
Eye damage category 1	H318 - Causes serious eye damage.
Skin sensitiser category 1	H317 - May cause an allergic skin reaction.
Mutagen category 1	H340 - May cause genetic defects. (state route if known)
Reproductive toxicity category 1	H360 - May damage fertility or the unborn child.
Lactation category 1	H362 - May cause harm to breast-fed children.
STOT* repeated exposure category 1	H372 - Causes damage to organs through prolonged or repeated exposure.
Chronic aquatic category 1	H410 - Very toxic to aquatic life with long lasting effects.
Hazardous to terrestrial vertebrates	H433 - Harmful to terrestrial vertebrates.

*STOT – specific target organ toxicity

SYMBOLS

DANGER

Other classifications/Hazards

If in case of mistreatment the ingredients are released, a spontaneously flammable gas mixture may be released under certain circumstances (measures according to sections 4 to 6).
Attention: If batteries are treated wrong the danger of burns or bursts occurs. Batteries must not be heated above 100 °C or incinerated. The battery contents must not get in contact with water. If the negative electrode gets in contact with water or humidity hydrogen gas is formed, which may inflame spontaneously.

Swallowing an intact battery may lead to serious injury or death within 2 hours. Battery may cause chemical burns and damage to the gastrointestinal tract if swallowed.
If intact battery is swallowed, seek medical attention immediately.

Precautionary Statements for the open battery

Prevention	P101 - If medical advice is needed, have product container or label at hand. P102 - Keep out of reach of children. P103 - Read label before use. P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P223 - Keep away from any possible contact with water, because of violent reaction and possible flash fire. P231 + P232 - Handle under inert gas. Protect from moisture. P260 - Do not breathe fume/vapours. P263 - Avoid contact during pregnancy/while nursing. P264 - Wash hands thoroughly after handling. P270 - Do not eat, drink or smoke when using this product. P271 - Use only outdoors or in a well-ventilated area. P272 - Contaminated work clothing should not be allowed out of the workplace. P273 - Avoid release to the environment.P280 - Wear protective gloves/protective clothing/eye protection/face protection. P281 - Use personal protective equipment as required.
Response	P335 + P334 - Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. P301+P312 - IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell. P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P304+P340 - IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. P312 - Call a POISON CENTRE or doctor/physician if you feel unwell. P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P363 - Wash contaminated clothing before reuse. P310 - Immediately call a POISON CENTRE or doctor/physician. P305+P351+P338 - 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 CENTRE or doctor/physician. P308+P313 - IF exposed or concerned: Get medical advice/ attention. P391 - Collect spillage.
Storage	P402+P404 - Handle under inert gas. Protect from moisture. P405 - Store locked up.
Disposal	P501 - Dispose of contents/container in accordance with local/regional/national/international regulation.

3. Composition / Information on Ingredients

Component	CAS/ Identification	Conc (%)
Metal oxides (may include nickel, lithium, cobalt, manganese)	proprietary	20-50%
Carbon	proprietary	10-25%
Electrolyte	proprietary	10-20%
Copper	7440-50-8	5-20%
Steel	proprietary	<15%
Aluminium	7429-90-5	2-10%
Inert materials	proprietary	balance

This is a commercial product whose exact ratio of components may vary. Trace quantities of impurities are also likely.

4. First Aid

General Information

If medical advice is needed, have product container or label at hand. You should call the National Poisons Centre if you feel that you may have been harmed, burned or irritated by this product. The number is 0800 764 766 (0800 POISON) (24 hr emergency service).

Recommended first aid facilities Ready access to running water is required. Accessible eyewash is required.

Exposure

Swallowed IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Contact a doctor immediately.

Eye contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

Skin contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or doctor/physician.

Inhaled IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Advice to Doctor

Treat symptomatically

5. Firefighting Measures

Fire and explosion hazards: Batteries may present a hazard if exposed to a fire. Batteries can rupture in a fire and release contents as toxic fumes or vapours which may be flammable. Lithium can react with water and release hydrogen which adds to the fire risk. Hydrogen gas is explosive. Cells may explode and release metal parts.

Suitable extinguishing substances: Carbon dioxide, extinguishing powder. Fight larger fires with metal fire extinction powder
Keep intact batteries cool if exposed to a fire to prevent rupture.
Do not let used extinguishing media penetrate into surface water or ground water. If necessary, thicken water or foam with suitable solids. Dispose of properly.

Unsuitable extinguishing substances: Unknown.

Products of combustion: Batteries may emit toxic fumes and vapours in a fire.
At contact of electrolyte with water traces of hydrofluoric acid may be formed.

Protective equipment: Self-contained breathing apparatus. Safety boots, non-flammable overalls, gloves, hat and eye protection.

Hazchem code: NA

6. Accidental Release Measures

Containment There is no current legal requirement for containment of this product. It is a manufactured article.

Emergency procedures In the event that a battery is damaged and the content is released:
Wear protective equipment to prevent skin, eye and respiratory exposure. (see section 8 for details). Contain leakage using sand, earth or vermiculite. Collect and seal in properly labelled containers for disposal.

Clean-up method In the event of spillage of a large number of batteries (>100kg) alert the fire brigade to location and give brief description of hazard. Stop the source of the leak, if safe to do so. Prevent by whatever means possible any batteries from entering drains, sewers, or water courses. (If this occurs contact your regional council immediately).

Disposal Collect recoverable material into labelled containers for recycling or salvage. Recycle containers wherever possible. This material may be suitable for approved landfill. Dispose of only in accord with all regulations.

Precautions For content of open batteries: Wear protective equipment to prevent skin and eye contamination and the inhalation of vapours. Work up wind or increase ventilation.
For batteries: Ensure that no damage occurs to the batteries to prevent leakage of the content.

7. Storage & Handling

Storage

Store batteries in a cool, dry, well ventilation area. Keep away from heat, fire, sunlight and ignition sources. Store batteries in their packaging. Unpacked batteries may short circuit and generate heat.
Keep away from children. Battery cells are small enough to be swallowed. If this happens contact a doctor immediately.
If the Lithium ion cell is subject to long term storage (more than 3 months), it is recommended to recharge the Lithium ion cell periodically.
3 months: -10℃~+40℃, 45 to 85%RH
Storage is recommended at 0℃~+35℃ for long period storage. The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more.
Do not store together with oxidizing and acidic materials.

Handling

Handle batteries with care.
Do not solder or weld onto the battery.
Do not mix with used, or other battery types.
If handling the contents of an open battery: Keep exposure to a minimum, and minimise the quantities kept in work areas. See section 8 with regard to personal protective equipment requirements. Avoid skin and eye contact and inhalation of vapours/dusts.

8. Exposure Controls / Personal Protective Equipment

Workplace Exposure Standards

A workplace exposure standard (WES) has not been established by WorkSafe NZ for this product. There is a general limit of 3mg/m^3 for respirable particulates and 10mg/m^3 for inhalable particulates when limits have not otherwise been established.

NZ Workplace Exposure Stds	Ingredient	WES-TWA	WES-STEL
	Manganese Dioxide	0.2mg/m^3 0.02mg/m^3 (respirable)	data unavailable
	Graphite	3mg/m^3	data unavailable
	Lithium (Lithium Hydroxide	data unavailable	1ppm
	Copper	0.01mg/m^3 (respirable)	data unavailable
	Nickel	0.2mg/m^3 0.005mg/m^3 (respirable)	data unavailable

Engineering Controls

In industrial situations, it is expected that employee exposure to hazardous substances will be controlled to a level as far below the WES as practicable by applying the hierarchy of control required by the Health and Safety at Work Act (2015) and the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016. Exposure can be reduced by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods. If you believe air borne concentrations of mists, dusts or vapours are high, you are advised to modify processes or increase ventilation.

Personal Protective Equipment

General

Personal Protective Equipment (PPE) should not be used as the primary means of exposure protection, except in the event of an accident or emergency situation or where all other means of protection have proven to inadequate.
Clean PPE after use or dispose of as appropriate. Store PPE for re-use in a clean place. Regular training on the correct use of PPE should be provided. In particular the correct fitting and use of respirators and where applicable the cleaning of respirators should be undertaken.

Eyes

Avoid contact with eyes. Use safety glasses and or chemical splash goggles if spray is close to the eye. .

Skin

If discomfort is felt (e.g., if pre-existing conditions exist, such as dermatitis, cuts or sensitive skin), gloves may be helpful. If you suffer from dermatitis type skin conditions, use gloves.

Respiratory

A respirator when airborne concentrations approach the WES (section 8). If using a respirator, ensure that the cartridges are correct for the potential air contamination and are in good working order.

WES Additional Information

Not applicable

9. Physical & Chemical Properties

Appearance	Cylindrical cell containing electrolyte solution
Odour	intact battery has no odour
Odour threshold	no data
pH	no data
Freezing / melting point	no data
Boiling point	no data
Flash point	no data
Flammability	contents may be flammable
Upper & lower flammable limits	no LEL or UEL
Vapour pressure	no data
Vapour density	no data
Specific gravity / density	no data
Solubility	content partly soluble in water, reacts with water
Partition Coefficient:	no data
Auto-ignition temperature	no data
Decomposition temperature	no data
Viscosity	no data
Particle characteristics	no data

10. Stability & Reactivity

Stability	Stable at room temperature and pressure. Stable during normal use.
Conditions to be avoided	Keep from extreme heat and open flames. Do not dissemble, puncture, crush or incinerate. Do not immerse in water. Do not subject battery to mechanical shock. Prevent short circuits. Do not install with incorrect polarity. Do not attempt to recharge this battery.
Incompatible groups	Content of the battery: water, oxidising agents.
Substance Specific Incompatibility	none known
Hazardous decomposition products	May release toxic fumes if burned or exposed to fire. Manganese oxides, carbon dioxide, carbon monoxide. Lithium oxides, hydrogen gas.
Hazardous reactions	none known

11. Toxicological Information

Summary

During normal use the battery are not considered harmful/toxic.
The following summary is for the contents of the battery.
IF SWALLOWED: Can cause burning and permanent damage to the mouth and throat.
IF IN EYES: cause permanent eye damage.
IF ON SKIN: causes burns to the skin. May also cause allergic dermatitis (copper, nickel)
IF INHALED: if vapours are inhaled, these can cause respiratory irritation.
CHRONIC TOXICITY: prolonged or repeated contact with the contents of the battery may cause long term toxicity. Inhalation may impair brain function and show some developmental toxicity, i.e. it may affect foetus) and toxicity via breastmilk. (Manganese dioxide).

Supporting Data

Acute	**Oral**	Using LD_{50}'s for ingredients, the estimated LD_{50} (oral) for the mixture is > 2000mg/kg. Data considered includes: Manganese Dioxide 3480mg/kg, copper compounds: 15mg (Cu)/kg (guinea pig). 1,2-dimethoxyethane: 3200mg/kg (mouse).
	Dermal	No evidence of dermal toxicity.
	Inhaled	Using LC_{50}'s for ingredients, the esimtated LC_{50} (inhalation, rat) for the mixture is between 2 and 5 mg/L (dust/mist) ppm. Data considered includes: Manganese Dioxide LCL0: 0.5mg/L (dust/mist).
	Eye	The mixture is considered to be corrosive to the eye.
	Skin	The mixture is considered to be corrosive to the skin.

Chronic	**Sensitisation**	Nickel metal and nickel compounds present may be considered respiratory and skin sensitisers. Copper metal and copper compounds are also classed 6.5B.
	Mutagenicity	Copper is classed by EPA as a known mutagen.
	Carcinogenicity	Nickel alloy is also considered a suspected carcinogen.
	Reproductive / Developmental	The mixture is considered to be a reproductive or developmental toxicant, because Manganese dioxide is known or suspected to have an effect on or via lactation. Manganese dioxide dust has also been shown to affect offspring (developmental toxicity)
	Systemic	The mixture is considered to be a known or presumed target organ toxicant, because manganese dioxide is known or presumed to be a target organ toxicant. This product may affect the brain.
	Aggravation of existing conditions	None known.

12. Ecological Data

Summary

This mixture is considered toxic towards aquatic organisms with long lasting effects.

Supporting Data

Aquatic	Using EC_{50}'s for ingredients, the calculated EC_{50} for the mixture is between 1 mg/L and 10 mg/L. Data considered includes: Petroleum naphtha, hydrotreated light 2200mg/L (96hr, fish), 2.6 mg/L (96hr, Crustacea).
Bioaccumulation	No data
Degradability	No data
Soil	No evidence of soil toxicity.
Terrestrial vertebrate	This mixture is not considered harmful towards terrestrial vertebrates.
Terrestrial invertebrate	No evidence of toxicity towards terrestrial invertebrates.
Biocidal	no data
Environmental effect levels	No EELs are available for this mixture or ingredients

13. Disposal Considerations

Restrictions	There are no product-specific restrictions, however, local council and resource consent conditions may apply, including requirements of trade waste consents.
Disposal method	Disposal of this product must comply with the Hazardous Substances (Disposal) Notice 2017 and the requirements of the Resource Management Act for which approval should be sought from the Regional Authority. The substance must be treated and therefore rendered non-hazardous before discharge to the environment.
Contaminated packaging	Disposal of contaminated packaging must comply with the Hazardous Substances (Disposal) Notice 2017 clause 12. Ensure that the package is rendered incapable of containing any substance and is disposed in a manner that is consistent with the requirements of the substance it contained and the material of the package. If possible reuse or recycle packaging.

14. Transport Information

Land Transport Rule: Dangerous Goods 2005 - NZS 5433:2007
Transport according to NZS 5433 (Transport of Hazardous Substances on Land). Considered a dangerous good for transport.

UN number:	3090	**Proper shipping name:**	LITHIUM METAL BATTERIES
Class(es)	9 (Miscellaneous dangerous substances and articles)	**Packing group:**	III
Precautions:	NA	**Hazchem code:**	4W

AIR TRANSPORT:

UN number:	3090	**Proper shipping name:**	LITHIUM METAL BATTERIES
Class(es)	9 (Miscellaneous dangerous substances and articles)	**Packing group:**	III
Precautions:	NA	**ERG Guide No**	138

MARINE TRANSPORT:

UN number:	3090	**Proper shipping name:**	LITHIUM METAL BATTERIES
Class(es)	9 (Miscellaneous dangerous substances and articles)	**Packing group:**	III
Precautions:	NA	**EmS**	F-A, S-I

15. Regulatory Information

Batteries are considered to be manufactured articles and are not, therefore, covered by the HSNO Act. Although they may contain hazardous substances, the item has an end use function wholly dependent on its shape and design, which does not involve the intentional release of any hazardous component. (from EPA New Zealand)

Other Legislation

In New Zealand, the use of this product may come under the Resource Management Act and Regulations, the Health and Safety at Work Act 2015 and the Health and Safety at Work (General Risk and Workplace Management) Regulations 2016, local Council Rules and Regional Council Plans.

16. Other Information

Abbreviations

Approval Code	Approval HSR002515, Aerosols (Flammable) Group Standard 2020 Controls, EPA. www.epa.govt.nz
CAS Number	Unique Chemical Abstracts Service Registry Number
EC_{50}	Ecotoxic Concentration 50% – concentration in water which is fatal to 50% of a test population (e.g. daphnia, fish species)
EPA	Environmental Protection Authority (New Zealand)
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
HAZCHEM Code	Emergency action code of numbers and letters that provide information to emergency services, especially fire fighters
HSNO	Hazardous Substances and New Organisms (Act and Regulations)
IARC	International Agency for Research on Cancer
LEL/UEL	Lower Explosive Limit/ Upper Explosive Limit
LD_{50}	Lethal Dose 50% – dose which is fatal to 50% of a test population (usually rats).
LC_{50}	Lethal Concentration 50% – concentration in air which is fatal to 50% of a test population (usually rats)
MSDS (SDS)	Material Safety Data Sheet (or Safety Data Sheet)
NZIoC	New Zealand Inventory of Chemicals
STEL	Short Term Exposure Limit - The maximum airborne concentration of a chemical or biological agent to which a worker may be exposed in any 15 minute period, provided the TWA is not exceeded
STOT RE	System Target Organ Toxicity – Repeated Exposure
TWA	Time Weighted Average – generally referred to WES averaged over typical work day (usually 8 hours)
UN Number	United Nations Number
WES	Workplace Exposure Standard - The airborne concentration of a biological or chemical agent to which a worker may be exposed during work hours (usually 8 hours, 5 days a week). The WES relates to exposure that has been measured by personal monitoring using procedures that gather air samples in the worker's breathing zone.

References

Data	Unless otherwise stated comes from the EPA HSNO chemical classification information database (CCID).
EPA Transfer Gazettes	Classifications and controls assigned for specific ingredients (consolidated gazette, 2004)
WES	The latest NZ Workplace Exposure Standards published by WorkSafe NZ and available on their web site – www.worksafe.govt.nz.
Other References:	Suppliers SDS

Review

Date	**Reason for review**
April 2023	Not applicable – new SDS

Disclaimer