Lithium ion battery

Atlas Copco Industrial Technique AB

Chemwatch: **5274-35**
Version No: **16**
Safety Data Sheet (Conforms to Annex II of REACH (1907/2006) - Regulation 2020/878)

Chemwatch Hazard Alert Code: **1**

Issue Date: **5/20/2025**
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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
Synonyms	For Identification, model number and Physical properties, see Appendix A, (page 15 of 15)
Proper shipping name	LITHIUM ION BATTERIES (including lithium ion polymer batteries)
Chemical formula	Not Applicable
Other means of identification	Not Available

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

Relevant identified uses	Use according to manufacturer's directions. Multicell battery pack.
Uses advised against	Not Applicable

1.3. Details of the supplier of the safety data sheet

Registered company name	**Atlas Copco Industrial Technique AB;**	
Address	Sickla Industrivag 19 Nacka, Stockholm SE-105 23 Sweden;	
Telephone	+46 (0)8 743 95 00	
Fax	Not Available	
Website	www.atlascopco.com	
Email	regulatory.compliance.TOO@se.atlascopco.com	
Name and address of factory (ies):	**Techtronic Industries (Dongguan) Co. Ltd** No. 2 Hujing Road, Houjie Town, Dongguan City, Guangdong Province, P.R. China	**BMZ Poland Sp. z o.o.** Alberta Einsteina 9 44-109 Gliwice, Poland

1.4. Emergency telephone number

Association / Organisation	**CHEMWATCH EMERGENCY RESPONSE**
Emergency telephone numbers	+46 8 446 824 11
Other emergency telephone numbers	Not Available

Once connected and if the message is not in your prefered language then please dial 01

SECTION 2 Hazards identification

2.1. Classification of the substance or mixture

Classification according to regulation (EC) No 1272/2008 [CLP] and amendments [1]	Not Applicable

2.2. Label elements

Hazard pictogram(s)	Not Applicable
Signal word	**Not Applicable**

Hazard statement(s)

Not Applicable

Supplementary statement(s)

Not Applicable

Precautionary statement(s) Prevention

Not Applicable

Precautionary statement(s) Response

Not Applicable

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

Not Applicable

Page 1 continued...

2.3. Other hazards

cobalt lithium manganese nickelate	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
ethyl acetate	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)
dimethyl carbonate	Listed in the Europe Regulation (EC) No 1907/2006 - Annex XVII (Restrictions may apply)

Not Applicable

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] and amendments	SCL / M-Factor	Nanoform Particle Characteristics
1.182442-95-1 2.480-390-0 3.Not Available 4.Not Available	Not Spec	cobalt lithium manganese nickelate	Acute Toxicity (Inhalation) Category 2,Carcinogenicity Category 1A,Reproductive Toxicity Category 1B,Specific Target Organ Toxicity - Repeated Exposure Category 1,Hazardous to the Aquatic Environment Long-Term Hazard Category 3; H330, H350, H360, H372, H412 [1]	Not Available	Not Available
1.7782-42-5 2.231-955-3 3.Not Available 4.Not Available	Not Spec	graphite	Not Applicable	Not Available	Not Available
1.141-78-6 2.205-500-4 3.607-022-00-5 4.Not Available	Not Spec	ethyl acetate *	Flammable Liquids Category 2,Serious Eye Damage/Eye Irritation Category 2A,Specific Target Organ Toxicity - Single Exposure Category 3; H225, H319, H336 [1]	Not Available	Not Available
1.96-49-1 2.202-510-0 3.Not Available 4.Not Available	Not Spec	ethylene carbonate	Acute Toxicity (Oral) Category 4,Serious Eye Damage/Eye Irritation Category 2A,Specific Target Organ Toxicity - Repeated Exposure Category 2; H302, H319, H373, EUH019 [1]	Not Available	Not Available
1.616-38-6 2.210-478-4 3.607-013-00-6 4.Not Available	Not Spec	dimethyl carbonate	Flammable Liquids Category 2; H225 [1]	Not Available	Not Available
1.21324-40-3 2.244-334-7 3.Not Available 4.Not Available	Not Spec	lithium fluorophosphate	Acute Toxicity (Oral) Category 3,Skin Corrosion/Irritation Category 1A,Serious Eye Damage/Eye Irritation Category 1,Specific Target Organ Toxicity - Repeated Exposure Category 1; H301, H314, H318, H372 [1]	Not Available	Not Available
1.24937-79-9 2. Not Available 3. Not Available 4. Not Available	Not Spec	vinylidene fluoride homopolymer	Not Applicable	Not Available	Not Available

Legend:	*1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 3. Classification drawn from C&L; * EU IOELVs available; [e] Substance identified as having endocrine disrupting properties*

SECTION 4 First aid measures

4.1. Description of first aid measures

Eye Contact	If this product comes in contact with the eyes: ▸ Wash out immediately with fresh running water. ▸ 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. ▸ Seek medical attention without delay; if pain persists or recurs seek medical attention. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin or hair contact occurs: ▸ Flush skin and hair with running water (and soap if available). Seek medical attention in event of irritation.
Inhalation	▸ If fumes, aerosols or combustion products are inhaled remove from contaminated area. Other measures are usually unnecessary.
Ingestion	▸ For advice, contact a Poisons Information Centre or a doctor at once. ▸ Urgent hospital treatment is likely to be needed. ▸ If swallowed do **NOT** induce vomiting. ▸ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▸ Observe the patient carefully. ▸ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▸ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.

Continued...

	▸ Transport to hospital or doctor without delay.

4.2 Most important symptoms and effects, both acute and delayed

See Section 11

Continued...

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

Treat symptomatically.

SECTION 5 Firefighting measures

5.1. Extinguishing media

- Dry chemical powder.
- Carbon dioxide.

5.2. Special hazards arising from the substrate or mixture

Fire Incompatibility	▸ Keep dry ▸ Reacts with acids producing flammable / explosive hydrogen (H2) gas ▸ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

5.3. Advice for firefighters

Fire Fighting	▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ Wear breathing apparatus plus protective gloves in the event of a fire. ▸ Prevent, by any means available, spillage from entering drains or water courses. ▸ Use fire fighting procedures suitable for surrounding area. ▸ **DO NOT** approach containers suspected to be hot. ▸ Cool fire exposed containers with water spray from a protected location. Slight hazard when exposed to heat, flame and oxidisers.
Fire/Explosion Hazard	Articles and manufactured articles may constitute a fire hazard where polymers form their outer layers or where combustible packaging remains in place. Certain substances, found throughout their construction, may degrade or become volatile when heated to high temperatures. This may create a secondary hazard. Combustible. Will burn if ignited.

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

Minor Spills	▸ Clean up all spills immediately. ▸ Secure load if safe to do so. ▸ Bundle/collect recoverable product. ▸ Collect remaining material in containers with covers for disposal.
Major Spills	▸ Clean up all spills immediately. ▸ Wear protective clothing, safety glasses, dust mask, gloves. ▸ Secure load if safe to do so. Bundle/collect recoverable product. ▸ Use dry clean up procedures and avoid generating dust. ▸ Vacuum up (consider explosion-proof machines designed to be grounded during storage and use).

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

Safe handling	▸ Avoid all personal contact, including inhalation. ▸ Wear protective clothing when risk of exposure occurs. ▸ Use in a well-ventilated area. ▸ Prevent concentration in hollows and sumps. ▸ **DO NOT** enter confined spaces until atmosphere has been checked. ▸ **DO NOT** allow material to contact humans, exposed food or food utensils.
Fire and explosion protection	See section 5

Continued...

Other information	▸ Store in original containers. ▸ Keep containers securely sealed. ▸ Store in a cool, dry, well-ventilated area. ▸ Store away from incompatible materials and foodstuff containers. ▸ Protect containers against physical damage and check regularly for leaks. ▸ Observe manufacturer's storage and handling recommendations contained within this SDS. ▸ Store away from incompatible materials.

7.2. Conditions for safe storage, including any incompatibilities

Suitable container	Generally packaging as originally supplied with the article or manufactured item is sufficient to protect against physical hazards. If repackaging is required ensure the article is intact and does not show signs of wear. As far as is practicably possible, reuse the original packaging or something providing a similar level of protection to both the article and the handler.

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Storage incompatibility	▸ Keep dry ▸ Reacts with acids producing flammable / explosive hydrogen (H2) gas ▸ Avoid reaction with oxidising agents

7.3. Specific end use(s)

See section 1.2

SECTION 8 Exposure controls / personal protection

8.1. Control parameters

Ingredient	DNELs Exposure Pattern Worker	PNECs Compartment
cobalt lithium manganese nickelate	Dermal 0.75 mg/kg bw/day (Systemic, Chronic) Inhalation 0.05 mg/m³ (Systemic, Chronic) Dermal 0.012 mg/cm² (Local, Chronic) Inhalation 0.003 mg/m³ (Local, Chronic) Inhalation 18.9 mg/m³ (Local, Acute) *Inhalation 60 ng/m³ (Systemic, Chronic) ** *Oral 0.011 mg/kg bw/day (Systemic, Chronic) ** *Inhalation 6.3 µg/m³ (Local, Chronic) ** *Oral 0.37 mg/kg bw/day (Systemic, Acute) ** *Inhalation 1.8 mg/m³ (Local, Acute) **	0.62 µg/L (Water (Fresh)) 2.36 µg/L (Water - Intermittent release) 0 µg/L (Water (Marine)) 53.8 mg/kg sediment dw (Sediment (Fresh Water)) 69.8 mg/kg sediment dw (Sediment (Marine)) 10.9 mg/kg soil dw (Soil) 0.33 mg/L (STP) 0.12 mg/kg food (Oral)
graphite	Inhalation 1.2 mg/m³ (Systemic, Chronic) Inhalation 1.2 mg/m³ (Local, Chronic) *Oral 813 mg/kg bw/day (Systemic, Chronic) ** *Inhalation 0.3 mg/m³ (Local, Chronic) **	Not Available
ethyl acetate	Dermal 63 mg/kg bw/day (Systemic, Chronic) Inhalation 734 mg/m³ (Systemic, Chronic) Inhalation 734 mg/m³ (Local, Chronic) Inhalation 1 468 mg/m³ (Systemic, Acute) Inhalation 1 468 mg/m³ (Local, Acute) *Dermal 37 mg/kg bw/day (Systemic, Chronic) ** *Inhalation 367 mg/m³ (Systemic, Chronic) ** *Oral 4.5 mg/kg bw/day (Systemic, Chronic) ** *Inhalation 367 mg/m³ (Local, Chronic) ** *Inhalation 734 mg/m³ (Systemic, Acute) ** *Inhalation 734 mg/m³ (Local, Acute) **	0.24 mg/L (Water (Fresh)) 0.024 mg/L (Water - Intermittent release) 1.65 mg/L (Water (Marine)) 1.15 mg/kg sediment dw (Sediment (Fresh Water)) 0.115 mg/kg sediment dw (Sediment (Marine)) 0.148 mg/kg soil dw (Soil) 650 mg/L (STP) 0.2 g/kg food (Oral)
ethylene carbonate	Dermal 4.3 mg/kg bw/day (Systemic, Chronic) Inhalation 15 mg/m³ (Systemic, Chronic) *Dermal 2.1 mg/kg bw/day (Systemic, Chronic) ** *Inhalation 3.7 mg/m³ (Systemic, Chronic) ** *Oral 2.1 mg/kg bw/day (Systemic, Chronic) **	5.9 mg/L (Water (Fresh)) 0.59 mg/L (Water - Intermittent release) 59 mg/L (Water (Marine)) 28.3 mg/kg sediment dw (Sediment (Fresh Water)) 2.83 mg/kg sediment dw (Sediment (Marine)) 2.2 mg/kg soil dw (Soil)
dimethyl carbonate	Dermal 5 mg/kg bw/day (Systemic, Chronic) Inhalation 34.9 mg/m³ (Systemic, Chronic) *Dermal 2.5 mg/kg bw/day (Systemic, Chronic) ** *Inhalation 8.7 mg/m³ (Systemic, Chronic) ** *Oral 2.5 mg/kg bw/day (Systemic, Chronic) **	0.5 mg/L (Water (Fresh)) 0.05 mg/L (Water - Intermittent release) 1 mg/L (Water (Marine)) 188 mg/L (STP)
lithium fluorophosphate	Dermal 133 µg/kg bw/day (Systemic, Chronic) Inhalation 0.931 mg/m³ (Systemic, Chronic)	0.31 mg/L (Water (Fresh)) 0.031 mg/L (Water - Intermittent release) 0.68 mg/L (Water (Marine)) 7.73 mg/kg sediment dw (Sediment (Fresh Water)) 1.55 mg/kg sediment dw (Sediment (Marine)) 13.5 mg/kg soil dw (Soil) 48 mg/L (STP)

* Values for General Population

Occupational Exposure Limits (OEL)

INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Europe ECHA Occupational exposure limits - Activity list	cobalt lithium manganese nickelate	Not Available	Not Available	Not Available	Not Available	Not Available
Sweden Occupational Exposure Limit Values and Measures against Air Contaminants	cobalt lithium manganese nickelate	# Lithium* and comp. (as Li) - inhaleble dust	Not Available	Not Available	0,02 mg/m3	Not Available
Sweden Occupational Exposure Limit Values and Measures against Air Contaminants	graphite	Dust, graphite - total dust	5 mg/m3	Not Available	Not Available	Not Available
Sweden Occupational Exposure Limit Values and Measures against Air Contaminants	graphite	Fibres, man made inorganic crystalline fibres - Graphite fibres	0,2 f/cc	Not Available	Not Available	M
EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)	ethyl acetate	Ethyl acetate	200 ppm / 734 mg/m3	1 468 mg/m3 / 400 ppm	Not Available	Not Available
Sweden Occupational Exposure Limit Values and Measures against Air Contaminants	ethyl acetate	Ethyl acetate	150 ppm / 500 mg/m3	1100 mg/m3 / 300 ppm	Not Available	Not Available

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Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Sweden Occupational Exposure Limit Values and Measures against Air Contaminants	lithium fluorophosphate	# Lithium* and comp. (as Li) - inhaleble dust	Not Available	Not Available	0,02 mg/m3	Not Available

Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
graphite	6 mg/m3	330 mg/m3	2,000 mg/m3
ethyl acetate	1,200 ppm	1,700 ppm	10000** ppm
ethylene carbonate	30 mg/m3	330 mg/m3	2,000 mg/m3
dimethyl carbonate	11 ppm	120 ppm	700 ppm
lithium fluorophosphate	7.5 mg/m3	83 mg/m3	500 mg/m3

Ingredient	Original IDLH	Revised IDLH
cobalt lithium manganese nickelate	500 mg/m3 / 10 mg/m3	Not Available
graphite	1,250 mg/m3	Not Available
ethyl acetate	2,000 ppm	Not Available
ethylene carbonate	Not Available	Not Available
dimethyl carbonate	Not Available	Not Available
lithium fluorophosphate	Not Available	Not Available
vinylidene fluoride homopolymer	Not Available	Not Available

Occupational Exposure Banding

Ingredient	Occupational Exposure Band Rating	Occupational Exposure Band Limit
ethylene carbonate	E	≤ 0.01 mg/m³
Notes:	*Occupational exposure banding is a process of assigning chemicals into specific categories or bands based on a chemical's potency and the adverse health outcomes associated with exposure. The output of this process is an occupational exposure band (OEB), which corresponds to a range of exposure concentrations that are expected to protect worker health.*	

8.2. Exposure controls

8.2.1. Appropriate engineering controls	Articles or manufactured items, in their original condition, generally don't require engineering controls during handling or in normal use. Exceptions may arise following extensive use and subsequent wear, during recycling or disposal operations where substances, found in the article, may be released to the environment.
8.2.2. Personal protection	
Eye and face protection	▸ Safety glasses with side shields ▸ Chemical goggles. ▸ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable.
Skin protection	See Hand protection below
Hands/feet protection	Wear general protective gloves, eg. light weight rubber gloves.
Body protection	See Other protection below
Other protection	▸ Overalls. ▸ P.V.C apron. ▸ Barrier cream. ▸ Skin cleansing cream. ▸ Eye wash unit.

Recommended material(s)

GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the:
"Forsberg Clothing Performance Index".
The effect(s) of the following substance(s) are taken into account in the ***computer-generated*** selection:
Lithium ion battery

Material	CPI
PE/EVAL/PE	A
PVA	A
SARANEX-23 2-PLY	A
BUTYL	B
TEFLON	B
VITON/CHLOROBUTYL	B

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Respiratory protection

Type A 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	A-AUS	-	A-PAPR-AUS / Class 1
up to 50 x ES	-	A-AUS / Class 1	-
up to 100 x ES	-	A-2	A-PAPR-2 ^

^ - Full-face
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or

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BUTYL/NEOPRENE	C
CPE	C
HYPALON	C
NATURAL RUBBER	C
NATURAL+NEOPRENE	C
NEOPRENE	C
NEOPRENE/NATURAL	C
NITRILE	C
NITRILE+PVC	C
PVC	C
SARANEX-23	C

* CPI - Chemwatch Performance Index
A: Best Selection
B: Satisfactory; may degrade after 4 hours continuous immersion
C: Poor to Dangerous Choice for other than short term immersion
NOTE: As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -
* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

Respiratory protection not normally required due to the physical form of the product.

8.2.3. Environmental exposure controls

See section 12

SECTION 9 Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	Manufactured

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

9.2. Other information

Not Available

SECTION 10 Stability and reactivity

10.1.Reactivity	See section 7.2
10.2. Chemical stability	▸ Presence of heat source and ignition source ▸ Unstable in the presence of incompatible materials. ▸ Product is considered stable. ▸ Hazardous polymerisation will not occur.
10.3. Possibility of hazardous reactions	See section 7.2
10.4. Conditions to avoid	See section 7.2

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10.5. Incompatible materials	See section 7.2
10.6. Hazardous decomposition products	See section 5.3

SECTION 11 Toxicological information

11.1. Information on toxicological effects

Inhaled	The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of the material, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress. Not normally a hazard due to non-volatile nature of product
Ingestion	Considered an unlikely route of entry in commercial/industrial environments
Skin Contact	The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
Eye	Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).
Chronic	As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.

Lithium ion battery	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
cobalt lithium manganese nickelate	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: >2000 mg/kg[1]	Not Available
	Oral (Rat) LD50; >2000 mg/kg[1]	
graphite	**TOXICITY**	**IRRITATION**
	Inhalation(Rat) LC50; >2 mg/L4h[1]	Not Available
	Oral (Rat) LD50; >2000 mg/kg[1]	
ethyl acetate	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: >18000 mg/kg[2]	Eye (human): 400 ppm
	Inhalation(Mouse) LC50; >18 mg/l4h[1]	Eye: no adverse effect observed (not irritating)[1]
	Oral (Mouse) LD50; 4100 mg/kg[2]	Skin: no adverse effect observed (not irritating)[1]
ethylene carbonate	**TOXICITY**	**IRRITATION**
	dermal (rat) LD50: >2000 mg/kg[1]	Eye (rabbit): 20 mg - mild
	Oral (Rat) LD50; >2000 mg/kg[1]	Eye: adverse effect observed (irritating)[1]
		Skin (rabbit): 660 mg - moderate
		Skin: no adverse effect observed (not irritating)[1]
dimethyl carbonate	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: >2000 mg/kg[1]	Eye: no adverse effect observed (not irritating)[1]
	Inhalation(Rat) LC50; >5.36 mg/l4h[1]	Skin: no adverse effect observed (not irritating)[1]
	Oral (Rat) LD50; >5000 mg/kg[1]	
lithium fluorophosphate	**TOXICITY**	**IRRITATION**
	Oral (Rat) LD50; 50-300 mg/kg[1]	Not Available
vinylidene fluoride homopolymer	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
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*	

COBALT LITHIUM MANGANESE NICKELATE	The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important. A weakly sensitising substance which is widely distributed can be a more important allergen than one with stronger sensitising potential with which few individuals come into contact.
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 on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. For ethylene carbonate: Ethylene carbonate is rapidly converted to ethylene glycol, and both substances have similar toxicity in animals. In animals, chronic exposure has resulted in kidney damage. Testing has not shown ethylene carbonate to cause genetic toxicity. At sufficient

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	doses, ethylene carbonate caused birth defects. For ethylene glycol: Ethylene glycol is quickly and extensively absorbed throughout the gastrointestinal tract. Limited information suggests that it is also absorbed through the airways; absorption through skin is apparently slow. Following absorption, it is distributed throughout the body. In humans, it is initially metabolized by alcohol dehydrogenase to form glycoaldehyde, which is rapidly converted to glycolic acid and glyoxal. These breakdown products are oxidized to glyoxylate, which may be further metabolized to formic acid, oxalic acid, and glycine. Breakdown of both glycine and formic acid can generate carbon dioxide, which is one of the major elimination products of ethylene glycol.
COBALT LITHIUM MANGANESE NICKELATE & GRAPHITE & LITHIUM FLUOROPHOSPHATE & VINYLIDENE FLUORIDE HOMOPOLYMER	No significant acute toxicological data identified in literature search.
GRAPHITE & ETHYL ACETATE & ETHYLENE CARBONATE & LITHIUM FLUOROPHOSPHATE	Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. 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. On the other hand, industrial bronchitis is a disorder that occurs as a result of exposure due to high concentrations of irritating substance (often particles) and is completely reversible after exposure ceases.

Acute Toxicity	✗	**Carcinogenicity**	✗
Skin Irritation/Corrosion	✗	**Reproductivity**	✗
Serious Eye Damage/Irritation	✗	**STOT - Single Exposure**	✗
Respiratory or Skin sensitisation	✗	**STOT - Repeated Exposure**	✗
Mutagenicity	✗	**Aspiration Hazard**	✗

Legend: ✗ *– Data either not available or does not fill the criteria for classification*
✔ *– Data available to make classification*

11.2.1. Endocrine Disruption Properties

Not Available

SECTION 12 Ecological information

12.1. Toxicity

Lithium ion battery

Endpoint	Test Duration (hr)	Species	Value	Source
Not Available	Not Available	Not Available	Not Available	Not Available

cobalt lithium manganese nickelate

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	72h	Algae or other aquatic plants	>1mg/l	2
NOEC(ECx)	504h	Crustacea	>0.1<=1mg/l	2

graphite

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	72h	Algae or other aquatic plants	>=100mg/l	2
EC50	72h	Algae or other aquatic plants	>100mg/l	2
EC50	48h	Crustacea	>100mg/l	2
LC50	96h	Fish	>100mg/l	2

ethyl acetate

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	72h	Algae or other aquatic plants	>100mg/l	1
EC50	48h	Crustacea	164mg/l	1
LC50	96h	Fish	>75.6mg/l	2

ethylene carbonate

Endpoint	Test Duration (hr)	Species	Value	Source
NOEC(ECx)	72h	Algae or other aquatic plants	100mg/l	2
EC50	72h	Algae or other aquatic plants	>100mg/l	2
EC50	48h	Crustacea	>100mg/l	2
LC50	96h	Fish	>100mg/l	2

dimethyl carbonate

Endpoint	Test Duration (hr)	Species	Value	Source
EC50	72h	Algae or other aquatic plants	>57.29mg/l	2
NOEC(ECx)	504h	Crustacea	25mg/l	2
EC50	48h	Crustacea	>74.16mg/l	2
EC50	96h	Algae or other aquatic plants	166.6-211mg/l	2

Continued...

	LC50	96h	Fish	>=100mg/l	2

Continued...

lithium fluorophosphate	EC50	72h	Algae or other aquatic plants	62mg/l	2
	NOEC(ECx)	528h	Fish	0.2mg/l	2
	EC50	48h	Crustacea	98mg/l	2
	EC50	96h	Algae or other aquatic plants	43mg/l	2
	LC50	96h	Fish	42mg/l	2
vinylidene fluoride homopolymer	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 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
ethyl acetate	LOW (Half-life = 14 days)	LOW (Half-life = 14.71 days)
ethylene carbonate	HIGH	HIGH
dimethyl carbonate	HIGH	HIGH
vinylidene fluoride homopolymer	LOW	LOW

12.3. Bioaccumulative potential

Ingredient	Bioaccumulation
ethyl acetate	HIGH (BCF = 3300)
ethylene carbonate	LOW (LogKOW = -0.3388)
dimethyl carbonate	LOW (LogKOW = 0.2336)
vinylidene fluoride homopolymer	LOW (LogKOW = 1.24)

12.4. Mobility in soil

Ingredient	Mobility
ethyl acetate	LOW (KOC = 6.131)
ethylene carbonate	LOW (KOC = 9.168)
dimethyl carbonate	LOW (KOC = 8.254)
vinylidene fluoride homopolymer	LOW (KOC = 35.04)

12.5. Results of PBT and vPvB assessment

	P	B	T
Relevant available data	Not Available	Not Available	Not Available
PBT	✗	✗	✗
vPvB	✗	✗	✗

PBT Criteria fulfilled?	No
vPvB	No

12.6. Endocrine Disruption Properties

Not Available

12.7. Other adverse effects

Not Available

SECTION 13 Disposal considerations

13.1. Waste treatment methods

Product / Packaging disposal	▸ Recycle wherever possible or consult manufacturer for recycling options. ▸ Consult State Land Waste Management Authority for disposal.
Waste treatment options	Not Available
Sewage disposal options	Not Available

SECTION 14 Transport information

Labels Required

Continued...

	
Marine Pollutant	NO

Land transport (ADR-RID)

14.1. **UN number**	3480
14.2. **UN proper shipping name**	LITHIUM ION BATTERIES (including lithium ion polymer batteries)
14.3. **Transport hazard class(es)**	Class: 9 Subrisk: Not Applicable
14.4. **Packing group**	Not Applicable
14.5. **Environmental hazard**	Not Applicable
14.6. **Special precautions for user**	Hazard identification (Kemler): Not Applicable Classification code: M4 Hazard Label: 9A Special provisions: 188 230 310 348 376 377 387 636 Limited quantity: 0 Tunnel Restriction Code: 2 (E)

Air transport (ICAO-IATA / DGR)

14.1. **UN number**	3480
14.2. **UN proper shipping name**	Lithium ion batteries (including lithium ion polymer batteries)
14.3. **Transport hazard class(es)**	ICAO/IATA Class: 9 ICAO / IATA Subrisk: Not Applicable ERG Code: 12FZ
14.4. **Packing group**	Not Applicable
14.5. **Environmental hazard**	Not Applicable
14.6. **Special precautions for user**	Special provisions: A88 A99 A154 A164 A183 A201 A206 A213 A331 A334 A802 Cargo Only Packing Instructions: See 965 Cargo Only Maximum Qty / Pack: See 965 Passenger and Cargo Packing Instructions: Forbidden Passenger and Cargo Maximum Qty / Pack: Forbidden 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**	3480
14.2. **UN proper shipping name**	LITHIUM ION BATTERIES (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: 188 230 310 348 376 377 384 387 Limited Quantities: 0

Inland waterways transport (ADN)

14.1. **UN number**	3480
14.2. **UN proper shipping name**	LITHIUM ION BATTERIES (including lithium ion polymer batteries)
14.3. **Transport hazard class(es)**	9 Not Applicable
14.4. **Packing group**	Not Applicable

Continued...

14.5. Environmental hazard	Not Applicable
14.6. Special precautions for user	Classification code: M4 Special provisions: 188; 230; 310; 348; 376; 377; 387; 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

14.8. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
cobalt lithium manganese nickelate	Not Available
graphite	Not Available
ethyl acetate	Not Available
ethylene carbonate	Not Available
dimethyl carbonate	Not Available
lithium fluorophosphate	Not Available
vinylidene fluoride homopolymer	Not Available

14.9. Transport in bulk in accordance with the ICG Code

Product name	Ship Type
cobalt lithium manganese nickelate	Not Available
graphite	Not Available
ethyl acetate	Not Available
ethylene carbonate	Not Available
dimethyl carbonate	Not Available
lithium fluorophosphate	Not Available
vinylidene fluoride homopolymer	Not Available

SECTION 15 Regulatory information

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

cobalt lithium manganese nickelate is found on the following regulatory lists

Chemical Footprint Project - Chemicals of High Concern List
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 EC Inventory
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 1: Carcinogenic to humans
International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs - Group 2B: Possibly carcinogenic to humans
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)
Sweden Occupational Exposure Limit Values
Sweden Swedish Chemicals Agency (KEMI) Restricted Substances Database

graphite is found on the following regulatory lists

Europe EC Inventory
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)
International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)
Sweden Occupational Exposure Limit Values

ethyl acetate is found on the following regulatory lists

EU Consolidated List of Indicative Occupational Exposure Limit Values (IOELVs)
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 EC Inventory
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)
European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI
Sweden Occupational Exposure Limit Values

ethylene carbonate is found on the following regulatory lists

EU European Chemicals Agency (ECHA) Community Rolling Action Plan (CoRAP) List of Substances
Europe EC Inventory
European Union - European Inventory of Existing Commercial Chemical Substances (EINECS)

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

Continued...

Europe EC Inventory	European Union (EU) Regulation (EC) No 1272/2008 on Classification, Labelling and Packaging of Substances and Mixtures - Annex VI

lithium fluorophosphate is found on the following regulatory lists

Continued...

Europe EC Inventory

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

International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

Sweden Occupational Exposure Limit Values

vinylidene fluoride homopolymer is found on the following regulatory lists

International WHO List of Proposed Occupational Exposure Limit (OEL) Values for Manufactured Nanomaterials (MNMS)

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : Directives 98/24/EC, - 92/85/EEC, - 94/33/EC, - 2008/98/EC, - 2010/75/EU; Commission Regulation (EU) 2020/878; Regulation (EC) No 1272/2008 as updated through ATPs.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

ECHA SUMMARY

Ingredient	CAS number	Index No	ECHA Dossier
cobalt lithium manganese nickelate	182442-95-1	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. 2; Carc. 1B; STOT RE 1; Aquatic Chronic 3	GHS08; GHS06; Dgr	H330; H350; H372; H412
2	Acute Tox. 2; Carc. 1B; STOT RE 1; Aquatic Chronic 3; Skin Sens. 1; Resp. Sens. 1; Repr. 1B; Skin Irrit. 2; Eye Irrit. 2	GHS08; GHS06; Dgr	H330; H350; H372; H412; H317; H334; H360Fd; H315; H319

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	Skin Irrit. 2; Eye Irrit. 2; STOT SE 3	GHS07; Wng	H315; H319; H335
2	Skin Irrit. 2; Eye Irrit. 2; STOT SE 3	GHS07; Wng	H315; H319; H335

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

Ingredient	CAS number	Index No	ECHA Dossier
ethyl acetate	141-78-6	607-022-00-5	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; Aquatic Chronic 4	GHS07; Wng	H315; H413
2	Skin Irrit. 2; Aquatic Chronic 4	GHS07; Wng	H315; H413

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)
1	Acute Tox. 4; Eye Irrit. 2; STOT RE 2	GHS08; Wng	H302; H319; H373
2	Acute Tox. 4; STOT RE 2; Skin Irrit. 2; STOT SE 3; Eye Dam. 1	GHS08; Dgr; GHS05	H302; H373; H315; H335; H318

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

Ingredient	CAS number	Index No	ECHA Dossier
dimethyl carbonate	616-38-6	607-013-00-6	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1	Flam. Liq. 2	GHS02; Dgr	H225
2	Flam. Liq. 2	GHS02; Dgr	H225; H315; H317; H319; H334; H335; H351; H373

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; Acute Tox. 3; Met. Corr. 1; Acute Tox. 3	GHS08; GHS05; GHS06; Dgr	H301; H314; H372; H318; H311; H290; H331

Continued...

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

Continued...

Ingredient	CAS number	Index No	ECHA Dossier
vinylidene fluoride homopolymer	24937-79-9	Not Available	Not Available

Harmonisation (C&L Inventory)	Hazard Class and Category Code(s)	Pictograms Signal Word Code(s)	Hazard Statement Code(s)
1			
2	Skin Irrit. 2; Eye Irrit. 2; STOT SE 3	GHS07; Wng	H315; H319; H335

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

National Inventory Status

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	No (cobalt lithium manganese nickelate)
Canada - DSL	No (cobalt lithium manganese nickelate; lithium fluorophosphate)
Canada - NDSL	No (cobalt lithium manganese nickelate; graphite; ethyl acetate; ethylene carbonate; dimethyl carbonate; vinylidene fluoride homopolymer)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	No (cobalt lithium manganese nickelate; vinylidene fluoride homopolymer)
Japan - ENCS	No (cobalt lithium manganese nickelate; graphite; lithium fluorophosphate)
Korea - KECI	No (cobalt lithium manganese nickelate)
New Zealand - NZIoC	No (cobalt lithium manganese nickelate; lithium fluorophosphate)
Philippines - PICCS	No (cobalt lithium manganese nickelate)
USA - TSCA	Yes
Taiwan - TCSI	Yes
Mexico - INSQ	No (cobalt lithium manganese nickelate; ethylene carbonate; lithium fluorophosphate; vinylidene fluoride homopolymer)
Vietnam - NCI	Yes
Russia - FBEPH	No (cobalt lithium manganese nickelate; lithium fluorophosphate)
Legend:	*Yes = All CAS declared ingredients are on the inventory* *No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.*

SECTION 16 Other information

Revision Date	27/01/2022
Initial Date	02/11/2017

Full text Risk and Hazard codes

H225	Highly flammable liquid and vapour.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H330	Fatal if inhaled.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H350	May cause cancer.
H360	May damage fertility or the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.

SDS Version Summary

Version	Date of Update	Sections Updated
11	27/01/2022	Acute Health (skin), Acute Health (swallowed), Appearance, Chronic Health, Classification, First Aid (swallowed), Ingredients, Physical Properties, Supplier Information
12	28/01/2022	Acute Health (skin), Acute Health (swallowed), Appearance, Chronic Health, Classification, First Aid (swallowed), Ingredients, Physical Properties, Supplier Information
13	18/10/2022	Acute Health (skin), Acute Health (swallowed), Appearance, Chronic Health, Classification, First Aid (swallowed), Ingredients, Physical Properties, Supplier Information

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee 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.

Continued...

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
ES: Exposure Standard
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
AIIC: Australian Inventory of Industrial Chemicals
DSL: Domestic Substances List
NDSL: Non-Domestic Substances List
IECSC: Inventory of Existing Chemical Substance in China
EINECS: European INventory of Existing Commercial chemical Substances
ELINCS: European List of Notified Chemical Substances
NLP: No-Longer Polymers
ENCS: Existing and New Chemical Substances Inventory
KECI: Korea Existing Chemicals Inventory
NZIoC: New Zealand Inventory of Chemicals
PICCS: Philippine Inventory of Chemicals and Chemical Substances
TSCA: Toxic Substances Control Act
TCSI: Taiwan Chemical Substance Inventory
INSQ: Inventario Nacional de Sustancias Químicas
NCI: National Chemical Inventory
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

Continued...

Appendix A: Identification, model number and Physical properties

Model No:	Model Name	Technology	Technical data	Weight	No cells:	Cell Type	Appearance:	Shape:
4211 6130 02	Battery 14V	Lithium Ion	14V 2.5Ah 35Wh	370g	4	US18650VCT5A	Black plastic housing	Rectangular
	Battery 14V	Lithium Ion	14V 2.5Ah 35Wh	370g	4	L1865-2.5	Black plastic housing	Rectangular
	Battery 14V	Lithium Ion	14V 2.5Ah 35Wh	370g	4	INR18650-25PG	Black plastic housing	Rectangular
4211 6130 06	Battery 18V	Lithium Ion	18V 2.5Ah 45Wh	490 g	5	L1865-2.5	Black plastic housing	Rectangular
	Battery 18V	Lithium Ion	18V 2.5Ah 45Wh	490 g	5	INR18650-25PG	Black plastic housing	Rectangular
4211 6130 14	Battery 36V	Lithium Ion	36V 2.5Ah 90Wh	760 g	10	L1865-2.5	Black plastic housing	Rectangular
	Battery 36V	Lithium Ion	36V 2.5Ah 90Wh	760 g	10	INR18650-25PG	Black plastic housing	Rectangular
4211 6130 15	Battery 36V MD	Lithium Ion	36V 2.5Ah 90Wh	880 g	10	L1865-2.5	Black plastic housing	Rectangular
	Battery 36V MD	Lithium Ion	36V 2.5Ah 90Wh	880 g	10	INR18650-25PG	Black plastic housing	Rectangular
4211 6130 16	Battery 36V HD	Lithium Ion	36V 2.5Ah 90Wh	1140 g	10	L1865-2.5	Black plastic housing	Rectangular
	Battery 36V HD	Lithium Ion	36V 2.5Ah 90Wh	1140 g	10	INR18650-25PG	Black plastic housing	Rectangular
4211 5500 12	Battery 18V	Lithium Ion	18V 2,5Ah 45Wh	480 g	5	INR18650-25R	Black plastic housing	Rectangular
	Battery 18V	Lithium Ion	18V 2,5Ah 45Wh	480 g	5	US18650VTC5A	Black plastic housing	Rectangular
	Battery 18V	Lithium Ion	18V 2,5Ah 45Wh	480 g	5	L1865-2.5	Black plastic housing	Rectangular
	Battery 18V	Lithium Ion	18V 2,5Ah 45Wh	480 g	5	INR18650-25PG	Black plastic housing	Rectangular
4211 5500 22	Battery 18V	Lithium Ion	18V 5Ah 90Wh	800 g	10	INR18650-25R	Black plastic housing	Rectangular
	Battery 18V	Lithium Ion	18V 5Ah 90Wh	800 g	10	US18650VTC5A	Black plastic housing	Rectangular
	Battery 18V	Lithium Ion	18V 5Ah 90Wh	800 g	10	L1865-2.5	Black plastic housing	Rectangular
	Battery 18V	Lithium Ion	18V 5Ah 90Wh	800 g	10	INR18650-25PG	Black plastic housing	Rectangular
4211 5500 32	Battery 30V	Lithium Ion	28V 5Ah 140Wh	1190 g	16	INR18650-25R	Black plastic housing	Rectangular
	Battery 30V	Lithium Ion	28V 5Ah 140Wh	1190 g	16	US18650VTC5A	Black plastic housing	Rectangular
	Battery 30V	Lithium Ion	28V 5Ah 140Wh	1190 g	16	L1865-2.5	Black plastic housing	Rectangular
	Battery 30V	Lithium Ion	28V 5Ah 140Wh	1190 g	16	INR18650-25PG	Black plastic housing	Rectangular
4211 5500 42	Battery 36V	Lithium Ion	36V 2,5Ah 90Wh	810 g	10	INR18650-25R	Black plastic housing	Rectangular
	Battery 36V	Lithium Ion	36V 2,5Ah 90Wh	810 g	10	US18650VTC5A	Black plastic housing	Rectangular
	Battery 36V	Lithium Ion	36V 2,5Ah 90Wh	810 g	10	L1865-2.5	Black plastic housing	Rectangular
	Battery 36V	Lithium Ion	36V 2,5Ah 90Wh	810 g	10	INR18650-25PG	Black plastic housing	Rectangular
4211550011	Battery 18V	Lithium Ion	18V 2Ah 35Wh	470 g	5	US18650VCT4	Black plastic housing	Rectangular
4211550021	Battery 18V	Lithium Ion	18V 4Ah 72Wh	770 g	10	US18650VCT4	Black plastic housing	Rectangular
4211550031	Battery 30V	Lithium Ion	28V 4Ah 112Wh	1150 g	16	US18650VCT4	Black plastic housing	Rectangular
4211550041	Battery 36V	Lithium Ion	36V 2Ah 72Wh	770 g	10	US18650VCT4	Black plastic housing	Rectangular
4211609300	Battery 3.7V	Lithium Ion	3.7V 330mAh 1,22 Wh	7,3g	1	ICP422339PR	Silver encased by wrap	Rectangular
4211565282	Battery 3.7V	Lithium Ion	3.7V 720mAh 2.66 Wh	25g	3	FT402035P	Black plastic housing	Rectangular
4211603086	Battery 36V	Lithium Ion	36V 2.5Ah 90Wh	800 g	10	US18650VTC5A	Black plastic housing	Rectangular
4211603085	Battery 18V	Lithium Ion	18V 2.5Ah 45 Wh	503 g	5	US18650VTC5A	Black plastic housing	Rectangular
4211550010	Battery 18V	Lithium Ion	18V 2.1Ah 38Wh	466 g	5	US18650VCT4	Black plastic housing	Rectangular
4211550020	Battery 18V	Lithium Ion	18V 4.2Ah 76Wh	771 g	10	US18650VCT4	Black plastic housing	Rectangular
4211550030	Battery 30V	Lithium Ion	30V 4.2Ah 126Wh	1147 g	16	US18650VCT4	Black plastic housing	Rectangular
4211550040	Battery 36V	Lithium Ion	36V 2.1Ah 76Wh	775 g	10	US18650VCT4	Black plastic housing	Rectangular
4211552682	Battery 18V	Lithium Ion	18V 2.1Ah 38Wh	383 g	5	US18650VCT4	Black plastic housing	Rectangular
4211552683	Battery 18V	Lithium Ion	18V 4.2Ah 76Wh	643 g	10	US18650VCT4	Black plastic housing	Rectangular
4211552687	Battery 36V	Lithium Ion	36V 2.1Ah 76Wh	647 g	10	US18650VCT4	Black plastic housing	Rectangular
4211558688	Battery 30V	Lithium Ion	30V 2.6Ah 78Wh	1010 g	16	US18650VCT1	Black plastic housing	Rectangular