Safety Data Sheet

Report No.: MTi221226001-01B1

Date of issue: Jan. 03, 2023

Sample Name:	Lithium ion battery pack
Model:	*SL471*
Applicant:	*Schumacher Europe*.
Address:	*Rue de la Baronnerie 3, 4920 Harze – Belgium*

Shenzhen Microtest Co., Ltd.
http://www.mtitest.com

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Add: 101, No. 7, Zone 2, Xinxing Industrial Park, Fuhai Avenue, Xinhe Community, Fuhai Street, Bao 'an District, Shenzhen, Guangdong, China.

** The SDS is prepared based on the information provided by client. The contents and formats of this SDS are revised as per client's request.*

Section 1- Identification

(a) Product identifier	
Product name	Lithium ion battery pack
(b) Other means of identification	
Product description	Model: 456578(4S1P) Nominal Voltage: 14.8V Nominal capacity: 1800mAh Watt-hour: 26.64Wh Weight: 191.4g
(c) Recommended use of the chemical and restrictions on use	
Recommended use	LITHIUM ION BATTERIES
Uses advised against	No information available.
(d) Details of the supplier of the safety data sheet	
Supplier Name	*Schumacher Europe*
Supplier Address	*Rue de la Baronnerie 3 – 4920 Harze – Belgium*
Manufacture Company	
Manufacture Address	
Supplier Phone Number	
(e) Emergency telephone number	

Section 2- Hazards Identification

(a) Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200). This product is an article which is a sealed battery and as such does not require an MSDS per the OSHA hazard communication standard unless ruptured. The hazards indicated are for a ruptured battery.

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Carcinogenicity	Category 2
Specific target organ toxicity (repeated exposure)	Category 1

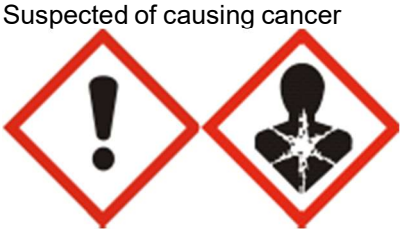
(b) GHS Label elements, including precautionary statements

Emergency Overview

Signal word	Danger

Hazard Statements

Causes skin irritation
Causes serious eye damage
Suspected of causing cancer



Appearance: No information available **Physical State**: Solid **Odor**: No information available

Precautionary Statements-Prevention	Do not breathe dust/fume/gas/mist/vapors/spray Wash face, hands and any exposed skin thoroughly after handling Wear protective gloves/protective clothing/eye protection/face protection Use only outdoors or in a well-ventilated area Do not eat, drink or smoke when using this product
Precautionary Statements-Response	Immediately call a POISON CENTER or doctor/physician Specific treatment (see supplemental first aid instructions on this label) Get medical advice/attention if you feel unwell
Eyes	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	IF ON SKIN: Wash with plenty of soap and water If skin irritation occurs: Get medical advice/attention Take off contaminated clothing and wash before reuse
Precautionary Statements-Storage	Store locked up Store in a well-ventilated place. Keep container tightly closed
Precautionary Statements-Disposal	Dispose of contents/container to an approved waste disposal plant

(c) Hazards not otherwise classified (HNOC)

Not applicable

(d) Unknown Toxicity

32% of the mixture consists of ingredient(s) of unknown toxicity

(e) Other information

Very toxic to aquatic life with long lasting effects

(f) Interactions with Other Chemicals

No information available.

Section 3- Composition/Information On Ingredients

Chemical Name	CAS Number	Weight (%)	Trade Secret
Aluminum Foil (Al)	7429-90-5	≈13.63	*

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Copper Foil (Cu)	7440-50-8	≈10.11	*
SBR $(CF_2\text{-}CF_2)_n$	9003-55-8	≈0.59	*
PVDF	24937-79-9	≈1.15	*
Graphite (C)	7782-42-5	≈18.35	*
Electrolyte(proprietary)	21324-40-3	≈15.53	*
	96-49-1		*
	616-38-6		*
	623-53-0		*
$LiNi_{0.5}Co_{0.2}Mn_{0.3}O_2$	N/A	≈36	*
Carboxylmethyl Cellulose	9004-32-4	≈0.29	*
Separator	N/A	≈2.75	*
S-0	N/A	≈0.69	*
Super-P	N/A	≈0.94	*

" * " The exact percentage (concentration) of composition has been withheld as a trade secret.

Section 4- First-aid Measures

Description of first aid measures

·**After inhalation:** Supply fresh air; consult doctor in case of complaints.

·**After skin contact:** Immediately rinse with water.

·**After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.

·**After swallowing:** If symptoms persist consult doctor.

·**Most important symptoms and effects, both acute and delayed** No further relevant information available.

· **Indication of any immediate medical attention and special treatment needed**

No further relevant information available.

Section 5- Fire-fighting measures

(a) Suitable Extinguishing Media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

(b) Unsuitable extinguishing media

CAUTION: Use of water spray when fighting fire may be inefficient.

(c) Specific Hazards Arising from the Chemical

The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors.

(d) Hazardous Combustion Products

Carbon oxides.

(e) Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6- Accidental Release Measures

(a) Personal precautions, protective equipment and emergency procedures
If the battery is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area and allow the vapors to dissipate. Avoid skin and eyes contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerated. If leakage of the battery happens, liquid could be absorbed with sand, earth or other inert substance and contaminated area should be ventilated meantime.

(b) Environment precautions
Do not allow product to reach sewage system or any water source.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.

(c) Methods and material for containment and cleaning up
If battery casing is dismantled, small amounts of electrolyte may leak. Collect all released material in a plastic lined container. Dispose off according to the local law and rules. Avoid leached substances to get into the earth, canalization or waters.

Section 7- Handling and Storage

(a) Precautions for safe handling
Handling
Handle in accordance with good industrial hygiene and safety practice. Wear personal protective equipment. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

(b) Conditions for safe storage, including any incompatibilities
Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up. Keep out of the reach of children.
Incompatible Products
Strong acids. Strong oxidizing agents. Strong bases

Section 8- Exposure Controls/Personal Protection

(a) Control parameters

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Carbon black 1333-86-4	TWA: 3 mg/m³ inhalable fraction	TWA: 3.5 mg/m³ (vacated) TWA: 3.5 mg/m³	IDLH: 1750 mg/m³ TWA: 3.5 mg/m³ TWA: 0.1 mg/m³ Carbon black in presence of Polycyclic aromatic hydrocarbons PAH
Lithium Cobalt Oxide ($CoLiO_2$) 12190-79-3	TWA: 0.02 mg/m³	-	-
Phosphate(1-), hexafluoro-, lithium 21324-40-3	TWA:2.5mg/m³ F	TWA:2.5mg/m³ F TWA:2.5mg/m³ dust (vacated)TWA:2.5mg/m³	
Copper 7440-50-8	TWA:0.2mg/m³ fume TWA:1mg/m³Cu dust and mist	TWA:0.1mg/m³fume TWA:1mg/m³dust and mist (vacated) TWA:0.1mg/m³Cu	IDLH:100mg/m³dust ,fume and mist TWA:1mg/m³dust and mist

		dust,fume,mist	TWA:0.1mg/m³ fume
Aluminum foil 7429-90-5	TWA:1mg/m³ respirable fraction	TWA:15mg/m³ total dust TWA:5mg/m³respirable fraction (vacated) TWA:15mg/m³total dust (vacated) TWA:5mg/m³ respirable fraction(vacated) TWA:5mg/m³ AL Aluminum	TWA:10mg/m³ total dust TWA:5mg/m³ respirable dust

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value
OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits Immediately Dangerous to Life or Health

Other Exposure Guidelines	Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992) See section 15 for national exposure control parameters

(b) Appropriate engineering controls

Engineering Measures	Showers Eyewash stations Ventilation systems

(c) Individual protection measures, such as personal protective equipment

Eye/Face Protection	None required for consumer use. If there is a risk of contact:. Tight sealing safety goggles. Face protection shield.
Skin and body Protection	None required for consumer use. If there is a risk of contact:. Wear protective gloves and protective clothing.
Respiratory Protection	No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product. For environmental protection, remove and wash all contaminated protective equipment before re-use. No information available.

Section 9- Physical and Chemical Properties

Form	Solid
Color	No available
Odor	No available
pH	No available
Melting point/freezing point	No available
Boiling Point and Boiling range	No available

Flash Point	No available
Upper/lower flammability or explosive limits	No available
Vapor Pressure	No available
Vapor Density	No available
Relative density	No available
Solubility in Water	No available
Auto-ignition temperature	No available
Decomposition temperature	No available
Evaporation rate	No available
Flammability (soil, gas)	No available
Viscosity	No available

Section 10- Stability and reactivity

Reactivity	No information available.
Chemical stability	Stable under normal conditions.
Possibility of Hazardous Reactions	None under normal processing.
Hazardous Polymerization	Hazardous polymerization does not occur.
Conditions to avoid	Exposure to air or moisture over prolonged periods. Excessive heat.
Incompatible materials	Acids. Bases. Oxidizing agent.
Hazardous Decomposition Products	Carbon oxides.

Section 11 – Toxicological Information

Product Information	Product does not present an acute toxicity hazard based on known or supplied information. In case of rupture:
Irritation	Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract.
Eye contact	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Corrosive to the eyes and may cause severe damage including blindness. Causes serious eye damage. May cause irreversible damage to eyes.
Skin contact	Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns.

Ingestion	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Carbon black 1333-86-4	> 10000 mg/kg (Rat)	> 3 g/kg (Rabbit)	-

Information on toxicological effects

Symptoms	Erythema (skin redness). May cause redness and tearing of the eyes. Itching. Rashes. Hives.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization:	May cause sensitization of susceptible persons. May cause sensitization by skin contact.
Mutagenic Effects:	No information available.
Carcinogenicity:	The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Lithium Cobalt Oxide ($CoLiO_2$) 12190-79-3	A3	Group 2B		X
Carbon black 1333-86-4	A3	Group 2B		X

ACGIH (American Conference of Governmental Industrial Hygienists)
A3 - Animal Carcinogen
IARC (International Agency for Research on Cancer)
Group 2B - Possibly Carcinogenic to Humans
OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Reproductive Toxicity	No information available.
STOT - single exposure	No information available.
STOT - repeated exposure	Causes damage to organs through prolonged or repeated exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from chronic or repeated exposure. (STOT RE).
Chronic Toxicity	Contains a known or suspected carcinogen. Avoid repeated exposure. Prolonged exposure may cause chronic effects. May cause adverse liver effects.
Target Organ Effects	Respiratory system. Eyes. Skin. Gastrointestinal tract (GI). Central Vascular System (CVS).Kidney. Liver. Liver. Cardiovascular system. Systemic Toxicity.

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Aspiration Hazard	No information available.	
Numerical measures of toxicity Product Information		
The following values are calculated based on chapter 3.1 of the GHS document	**ATEmix (oral):**	12,905.00 mg/kg
	ATEmix (dermal):	10,200.00 mg/kg (ATE)

Section 12- Ecological Information

Ecological Toxicity	Very toxic to aquatic life with long lasting effects.

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Copper 7440-50-8	96h EC50: 0.031 - 0.054 mg/L (Pseudokirchneriella subcapitata) 72h EC50: 0.0426 - 0.0535 mg/L (Pseudokirchneriella subcapitata)	96h LC50: 0.0068 - 0.0156 mg/L (Pimephales promelas) 96h LC50: = 0.112 mg/L (Poecilia reticulata) 96h LC50: = 0.3 mg/L (Cyprinus carpio) 96h LC50: = 0.8 mg/L (Cyprinus carpio) 96h LC50: = 1.25 mg/L (Lepomis macrochirus) 96h LC50: = 0.052 mg/L (Oncorhynchus mykiss) 96h LC50: = 0.2 mg/L (Pimephales promelas) 96h LC50: < 0.3 mg/L (Pimephales promelas)		48h EC50: = 0.03 mg/L
Carbon black 1333-86-4				24h EC50: > 5600 mg/L

Persistence and Degradability	No information available.
Bioaccumulation	No information available.
Other adverse effects	No information available.

Section 13- Disposal Considerations

Waste treatment methods	
Disposal methods	This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

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Contaminated Packaging	Disposal should be in accordance with applicable regional, national and local laws and regulations.

California Hazardous Waste Codes 141
This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste
Lithium Cobalt Oxide ($CoLiO_2$) 12190-79-3	Toxic
Copper 7440-50-8	Toxic
Aluminum foil 7429-90-5	Ignitable powder

Section 14 – Transport Information

UN Number ***-DOT, IMDG, IATA***	UN 3480 & UN 3481
UN Proper shipping name ***-DOT, IMDG, IATA***	Lithium ion Batteries (Including lithium ion polymer batteries) or ; Lithium ion Batteries contained in equipments (Including lithium ion polymer batteries) or; Lithium ion Batteries packed with equipment (Including lithium ion polymer batteries)
Transport information	Lithium ion battery pack (Sample Model: 456578(4S1P)) is tested and has passed in accordance with UN manual of Tests and Criteria, Part III, subsection 38.3. The transportation of lithium cells and batteries is regulated by the International Air Transport Association (According to Section II/ Section IB of PACKING INST RUCTION 965, or to Section II of PACKING INSTRUCTION 966~967 of **IATA D GR 62nd** Edition for transportation), International Civil Aviation Organization, Inte rnational Maritime Dangerous Goods Code and the US Department of Transport ation listed in 49 CFR 173.185. Lithium batteries shipped as "Lithium batteries", "Lithium batteries packed with equipment",or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "special provision **A45** of IATA-DGR" or "special provision 188 of IMO-IMDG Code"
Transport hazard class(es) ***-DOT, IMDG, IATA***	9
Environmental hazards	Yes*(DOT)*
Marine pollutant	Symbol (fish and tree)
Special precautions for user **EMS Number**	Warning: Miscellaneous dangerous substances and articles F-A,S-N
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable
DOT **Remarks:**	Special marking with the symbol (fish and tree)
IMDG **Limited quantities (LQ)** **Excepted quantities (EQ)**	0 Code: E0 Not permitted as Excepted Quantity

Section 15- Regulatory information

(a) International Inventories

TSCA	Complies.
DSL	All components are listed either on the DSL or NDSL.

(b) US Federal Regulations

SARA 313	Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Chemical Name	CAS No	Weight-%	SARA 313 – Threshold Values %
Lithium Cobalt Oxide ($CoLiO_2$)	12190-79-3	15-40	0.1
Copper	7440-50-8	3-7	1.0
Aluminum foil	7429-90-5	7-13	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No
CWA (Clean Water Act)	This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Copper 7440-50-8		X	X	

CERCLA	This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
Copper 7440-50-8	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ

(c) US State Regulations

California Proposition 65	This product contains the following Proposition 65 chemicals.
Chemical name	California Proposition 65
Carbon black - 1333-86-4	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
Carbon black 1333-86-4	X	X	X		X
Lithium Cobalt Oxide ($CoLiO_2$) 12190-79-3	X		X	X	X
Dimethyl carbonate 616-38-6	X	X	X		
Aluminum 7429-90-5	X	X	X	X	

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Copper 7440-50-8	X	X	X	X	X
Ethylene carbonate 96-49-1		X	X		

(d) International Regulations

Mexico

National occupational exposure limits

Component	Carcinogen Status	Exposure Limits
Carbon black 1333-86-4 (15 - 40)		Mexico: TWA=3.5 mg/m^3
Aluminum 7429-90-5 (7 - 13)		Mexico: TWA= 10 mg/m^3
Copper 7440-50-8 (3 - 7)		Mexico: TWA= 1 mg/m^3 Mexico: TWA= 0.2 mg/m^3 Mexico: STEL= 2 mg/m^3

Mexico - Occupational Exposure Limits - Carcinogens

Canada

WHMIS Hazard Class	Not determined

Section 16- Additional Information

NFPA	**Health Hazards**	1	**Flammability**	0	**Instability**	0	**Physical and Chemical Hazards**	-
HMIS	**Health Hazards**	2*	**Flammability**	0	**Physical Hazard**	0	**Personal Protection**	X

Chronic Hazard Star Legend * = Chronic Health Hazard

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

******End of Safety Data Sheet******

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