SAFETY DATA SHEET

Reference No……..	:	WTX20X05030152B
Applicant……..	:	Darfon Electronics（Suzhou）Co., LTD
Address……	:	99 Zhu Yuan Road，New District，Suzhou，China
Manufacturer……..	:	Darfon Electronics（Suzhou）Co., LTD
Address……	:	99 Zhu Yuan Road，New District，Suzhou，China
Sample's name……	:	Rechargeable Li-ion Battery pack
Date of Issue……	:	2020-06-16
Test Report Form No.....	**:**	WBB-SDS-01A

Prepared By:

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Tested by	Compiled by	Approved by

Safety Data Sheet

Section 1- Identification of the Substance/Preparation and of the Company/Undertaking

Product Name:	Rechargeable Li-ion Battery pack
Model No.:	S01-L1-148-3200
Ratings	14.8V, 3200mAh, 47.4Wh
Dimension	135*36.8*20.3mm
Weight:	Approx. 193.0g
Manufacturer:	Darfon Electronics (Suzhou) Co., LTD
Address:	99 Zhu Yuan Road, New District, Suzhou, China
Emergency Telephone:	+86-15895403903
Fax:	+86-0512-88188800-1114
Email:	Frank.liu@darfon.com.cn

Section 2-Hazards Identification

Classification	This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29CFR 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	See section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns
Serious eye damage/eye irritation	The steam of the electrolyte may stimulate eyes. Especially, substance that may cause inflammation of the eyes is contained
Skin sensitization	The leakage of the electrolyte may cause sore and stimulation on the skin
Carcinogenicity	Inhalation of materials from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation
Specific target organ toxicity (repeated)	Swallowing is not anticipated due to the battery size. The ingestion of the electrolyte causes tissue damage to throat

GHS Label elements, including precautionary statements

Emergency Overview

Signal word: Danger
Hazard Statements
Causes skin irritation
Causes serious eye irritation
May cause an allergic skin reaction
May cause cancer



This product is an article which contains a chemical substance. Safety information is given for exposure to the article as sold.

Intended use of the product should not result in exposure to the chemical substance This is a battery. In case of rupture: the above hazards exist.

Appearance: Various **Physical State:** Solid **Odor:** No odor

Precautionary Statements - Prevention	Obtain special instructions before use Do not handle until all safety precautions have been read and understood Use personal protective equipment as required Wash face, hands and any exposed skin thoroughly after handling Contaminated work clothing should not be allowed out of the workplace Wear protective gloves Do not breathe dust/fume/gas/mist/vapors/spray Do not eat, drink or smoke when using this product
Precautionary Statements - Response	IF exposed or concerned: Get medical advice/attention Specific treatment (see supplemental first aid instructions on this label) IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing If eye irritation persists: Get medical advice/attention IF ON SKIN: Wash with plenty of soap and water Take off contaminated clothing and wash before reuse If skin irritation or rash occurs: Get medical advice/attention
Precautionary Statements - Storage	Store locked
Precautionary Statements - Disposal	Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)	Not applicable
Unknown Toxicity Other	31.6% of the mixture consists of ingredient(s) of unknown toxicity
Other information	May be harmful if swallowed. Very toxic to aquatic life with long lasting effects. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons
Interactions with Other Chemicals	No information available.

Section 3 – Composition/information on Ingredient

Pure ☐ Admixture☒

Chemical Name	CAS Number	Weight-%	Trade Secret
Lithium Cobalt Oxide (LiCoO2)	12190-79-3	36	---
Aluminum Foil	7429-90-5	6	---
Graphite	7782-42-5	24	---
1,1-Difluoroethylene polymer	24937-79-9	2	---
Copper	7440-50-8	6	---
Polyethylene	9002-88-4	3	---
Polypropylene	9003-07-0	1	---
Nickel	7440-02-0	1.5	---
Phosphate(1-),hexafluoro-, lithium	21324-40-3	7	---
Ethylene carbonate	96-49-1	3	---
Dimethyl carbonate	616-38-6	3	---
Propylene carbonate	108-32-7	1	---
Carbonate, methyl ethyl	623-53-0	3	---
Nylon-66	32131-17-2	0.5	---
Carbon	7440-44-0	3	---

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

Section 4 – First Aid Measure

General Advice	First aid is upon rupture of sealed battery. **Eye contact:** If symptoms persist, call a physician. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Do not rub affected area. **Skin contact:** Wash off immediately with soap and plenty of water for at least 15 minutes. In the case of skin irritation or allergic reactions see a physician. May cause an allergic skin reaction. **Inhalation:** Remove to fresh air. If symptoms persist, call a physician. Get medical attention immediately if symptoms occur. **Ingestion:** Do NOT induce vomiting. Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician. Self-protection of the first aider: Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Wear personal protective clothing (see section 8).
Most important symptoms and	Most important symptoms and effects: Itching. Coughing and/ or wheezing.

effects, both acute and delayed	

Section 5 – Fire Fighting measures

Suitable extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing Media	CAUTION: Use of water spray when fighting fire may be inefficient.
Specific Hazards arising from the chemical	Product is or contains a sensitizer. May cause sensitization by skin contact.
Hazardous Combustion Products	Carbon
Explosion Data	Sensitivity to Mechanical Impact: No. Sensitivity to Static Discharge: No.
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

Personal Precautions, protective equipment, and emergency procedures	**Personal Precautions:** Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. **Other Information:** Refer to protective measures listed in Sections 7 and 8.
Environmental Precautions	Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so.
Methods and material for containment and cleaning up	**Methods for Containment:** Prevent further leakage or spillage if safe to do so. **Methods for cleaning up:** Pick up and transfer to properly labeled containers.

Section 7 – Handing and storage

Precautions for safe handling	**Handling:** In case of rupture. Use personal protection equipment. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Do not breathe dust/fume/gas/mist/vapors/spray.
Conditions for safe storage, including any incompatibilities	**Storage:** Keep containers tightly closed in a dry, cool and well-ventilated place. **Incompatible Products:** Strong acids. Strong oxidizing agents. Strong bases.

Section 8 – Exposure controls, Personal Protection

Control parameters

Exposure Guidelines

Exposure Guidelines	ACGIH TLV	OSHA PEL	NIOSH IDLH
No information is available	---	---	---
No information is available	---	---	---
No information is available	---	---	---
No information is available	---	---	---

*ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits NIOSH IDLH 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

Appropriate engineering controls	**Engineering Measures:** Showers Eyewash stations Ventilation systems.
Individual protection measures, such as personal protective equipment	**Eye/Face Protection:** If splashes are likely to occur:. Wear safety glasses with side shields (or goggles). None required for consumer use. **Skin and Body Protection:** Wear protective gloves and protective clothing. Long sleeved clothing. Impervious gloves. **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.Wash hands before breaks and immediately after handling the product.

Section 9 – Physical and Chemical Properties

Physical Properties	Physical
	Appearance: Various
	Odor: No odor
	Physical
	Odor Threshold: No information available.

Chemical Properties:		
Property	**Values**	**Remarks/ Method**
pH	No data available	None known
Melting / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash Point	No data available	None known
Evaporation Rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air **Upper flammability limit** **Lower flammability limit**	No data available No data available	None known None known
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Specific Gravity	No data available	None known
Water Solubility	No data available	None known
Solubility in other solvents	No data available	None known
Partition coefficient: n-octanol/water	0.0001	None known
Autoignition temperature	130℃	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Dynamic viscosity	0.0001	None known
Explosive properties	No data available	None known
Oxidizing Properties	No data available	None known

Other Information

Softening Point	No data available
VOC Content (%)	No data available
Particle Size	No data available
Particle Size Distribution	No data available

Section 10 – Stability and Reactivity

Reactivity:	No data is available
Chemical stability:	Stable under recommended storage condition
Possibility of Hazardous Reactions:	None under normal processing.
Hazardous Polymerization:	Hazardous polymerization does not occur.
Conditions to avoid:	None known based on information supplied.
Incompatible materials	Strong acids. Strong oxidizing agents. Strong bases.
Hazardous Decomposition Products:	Carbon oxides.

Section 11 – Toxicological Information

Information on likely routes of exposure

Product Information	Product does not present an acute toxicity hazard based on known or supplied information. In case of rupture:
Inhalation	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. Expected to be an irritant based on components. Irritating to eyes. May cause redness, itching, and pain. May cause temporary eye irritation.
Skin Contact	Specific test data for the substance or mixture is not available. Expected to be an irritant based on components. Irritating to skin. Prolonged contact may cause redness and irritation.
Ingestion	Specific test data for the substance or mixture is not available. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Component Information

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
No information is available	---	---	---	---
No information is available	---	---	---	---

ACGIH (American Conference of Governmental Industrial Hygienists)
A3 - Animal Carcinogen
IARC (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
Group 2B - Possibly Carcinogenic to Humans
Group 3 - Not Classifiable as to Carcinogenicity in 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. Lungs. Heart.
Aspiration Hazard	No information available.

Numerical measures of toxicity Product Information

The values which are on the right are calculated based on chapter 3.1 of the GHS document.	**ATEmix (oral):** X **ATEmix (dermal):** X

Section 12 – Ecological Information

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
No information is available	---	---	---	---

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 (40CFR 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.
Contaminated Packaging: Dispose of in accordance with federal, state and local 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
No information is available	---
No information is available	---
No information is available	---
No information is available	---

Section 14 - Transport information

The Li-Ion battery as stated in Appendix are made in compliance to the requirements stated in the latest edition of the IATA Dangerous Goods Regulations Packing Instruction 965 section Ⅱ such that they can be transported as a NOT RESTRICTED (non-hazardous/non-dangerous) goods. However, if those Li-Ion batteries are packed with or contained in an equipment, then it is the responsibility of the shipper to ensure that the consignment are packed in compliance to the latest edition of the IATA. Dangerous Goods Regulations section of either Packing Instruction 966 or 967. Ⅱ. With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization (ICAO) Technical Instructions, Packing instruction 965 or 966 or 967, section Ⅱ (2015-2016 Edition).

- The International Air transport Association (IATA) Dangerous Goods Regulations, Packing instruction 965 or 966 or 967, section Ⅱ (61st Edition, 2020).

- Special provision 188 of the International Maritime Dangerous Goods (IMDG) Code (Amendment 39-18Edition).

- The US Hazardous Materials Regulation 49 CRF (Code of Federal Regulations), sections 173-185 Lithium batteries and cells.

- The UN Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria 38.3 Lithium batteries, Rev.6, Amend.1

These products are properly classified, described, packaged, marked, and labeled, and are in proper condition for transportation according to all the applicable international and national governmental regulations, not limited to the above mentioned. We further certify that the enclosed products have been tested and fulfilled the requirements and conditions in accordance with UN Recommendations (T1 – T8) on the Transport of Dangerous Goods Model Regulations and the Manual of Tests and Criteria.

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

Manual of Test and Criteria (38.3 Lithium battery)			
No.	**Test items**	**Test results**	**Remark**
T1	Altitude simulation	Pass	---
T2	Thermal test	Pass	---
T3	Vibration	Pass	---
T4	Shock	Pass	---
T5	External short circuit	Pass	---
T6	Impact / Crush	Pass	---
T7	Overcharge	Pass	---
T8	Forced discharge	Pass	---

Section 15 – Regulatory Information

International Inventories

TSCA: Complies

DSL: All components are listed either on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

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 %
No information is available	---	---	---
No information is available	---	---	---
No information is available	---	---	---
No information is available	---	---	---

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
X No information is available	---	---	---	---

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
No information is available	---	---	---
No information is available	---	---	---

US State Regulations
California Proposition 65
This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
No information is available	---

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Rhode Island	Illinois
No information is available	---	---	---	---	---
No information is available	---	---	---	---	---
No information is available	---	---	---	---	---
No information is available	---	---	---	---	---
No information is available	---	---	---	---	---
No information is available	---	---	---	---	---

International Regulations

Mexico

National occupational exposure limits

Component	Carcinogen Status	Exposure Limits
No information is available	---	---
No information is available	---	---

Mexico - Occupational Exposure Limits - Carcinogens

Canada

WHMIS Hazard Class

Non-controlled

Section 16 – Additional Information

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

Revision Date: X
Revision Note: No information available
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 Report ======