Email: vshih@totexmfg.com / Date: February 2019

Safety Data Sheet (SDS)

1. IDENTIFICATION OF THE GOODS AND COMPANY UNDERTAKING

Name of Company:	Totex Manufacturing Inc.
Address:	3050 Lomita Blvd. Torrance, CA 90505 USA
Contact Person:	Victor Shih
Telephone number:	310-326-2028
Fax number:	310-326-2336
For emergency:	call CHEMTREC at 1-703-527-3887
Product Name	Lithium Ion Batteries

2. HAZARDS IDENTIFICATION

Protective Clothing	NFPA Rating (USA)	EC Classification	WHMIS (Canada)	Transportation	GHS Hazard Symbol
Not required with normal use		Not Classified as Hazardous	Not required with normal	See Section 14	

This product is safe under normal use. Mis-handling and/or mis-use will cause serious damage to the product, and there will be the possibility of the generating of smoke or metals, rupture, or flaming.

Drop Test:	All packaging is capable of withstanding a 1.2m drop test in 6 different flat surface orientation without damage.
Toxicity:	See heading 11
Additional Information:	*Safety Instruction* Do not disassemble or reconstruct the product Do not short-circuit; Do not swallow the product Do not incinerate or heat the product Do not use or leave product nearby fire, stove, or heated place Do not immerse the product in water or sea water, or get it wet Do not give the product impact or throw it Do not drive a nail into the product, strike it by hammer or tread it

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3. COMPOSITION OF THE GOODS

Model#	Uses on	Voltage (Volts)	Capacity (mAh)	Pack Chemistry	No of cell contain in the each pack					one cell voltage (V)	One cell capacity (mA)	Equivalent Lithium Content for each cell(g)	Equivalent Lithium Content for each pack(g)	Wh
[Totex P/N : U80204-1]/ [Leica P/N : GEB242]/ [Leica Art. No : 793975]	OEM	14.80	6000	Lithium Ion	2	P	4	S	8	3.70	3100	0.930	7.440	88.80

Battery pack (cell) Ingredient Chart

Ingredient	Risk Codes	Safety Description	Hazard	Contents / Exposure Controls / Personal Protection
Cobalt oxide	R22;R43; R50/53	S24;S37;S60;S61	Xn (Harmful) N (Dangerous for the environment)	0.1 mg/m3(TWA)
Manganese(VI)oxide	R20/22	S25	Xn (Harmful)	**Airborne Exposure Limits:**- OSHA Permissible Exposure Limit(PEL):5 mg/m3 Ceiling for manganese compounds as Mn -ACGIH Threshold Limit Value(TVL):0.2 mg/m3(TWA)for manganese,elementaland inorganic compounds as Mn
Nickel oxide	R43,R49, R53	S45,S53,S61	T (Toxic)	**Airborne Exposure Limits:** For Nickel,Metal and Insoluble Compounds,as Ni:- OSHA Permissible Exposure Limite(PEL)- 1 mg/m3(TWA).For Nickel,Elemental/Metal:-ACGIH Threshold Limit Value(TLV)- 1.5mg/m3(TWA),A5- Not suspected as a human carcinogen.For Nickel,Insoluble Compounds,as Ni:- ACGIH Threshold Limit Value(TLV)- 0.2 mg/m3 (TWA), A1- Confirmed human carcinogen
Carbon	R36/37/38, R36/37 R20,R10	S22;S24/25	F (Highly Flammable) Xn (Harmful) Xi (Irritant)	**Airborne Exposure Limits:**- OSHA Permissible Exposure Limits(PELs):activated carbon(graphite,synthetic):Total particulate =15 mg/m3
Aluminium foil	R17,R15, R36/38,R10R67,R65, R62, R51,53, R48/20, R38,R11	S7/8,S43,S26,S62,S61,S36/37,S33,S29, S16,S9	F (Highly Flammable) Xn (Harmful) Xi (Irritant)	**Airborne Exposure Limits:**- OSHA Permissible Exposure Limit(PEL):15 mg/m3 (TWA)total dust and 5 mg/m3(TWA) repairable fraction for Aluminum metal as Al-ACGIH Threshold Limit Value(TLV): 10 mg/m3(TWA)Aluminum metal dusts
Copper foil	R11 R36 R37 R38	S5,S26,S16,S61, S36/37	F (Highly Flammable) N (Dangerous for the environment) Xn (Harmful) Xi (Irritant)	**Copper Dust and Mists,as Cu:**- OSHA Petmissible Exposure Limit(PEL)- 1 mg/m3(TWA)-ACGIH Threshold Limit Value (TLV)- 1 mg/m3(TWA)Copper Fume:- OSHA Permissible Exposure Limit(PEL)- 0.1 mg/m3(TWA)- ACGIH Threshold Limit Value(TLV)- 0.2 mg/m3 (TWA)
Polyvinylidene fluoride (PVdF)		S22;S24/25		

UN Class: UN 3480 - Class 9

Note: Under IATA Dangerous Goods Regulations 60th edition Packing Instruction 965 Part 1:-
Lithium Ion can be transported and meets the following:
1) Watt-hour rating is not more than 100Wh. The Watt-hour rating is marked on the outside of the battery case except those manufactured before 1 January 2009 which may be transported without this marking until 31 December 2010.
2) Each battery mentioned above is of the type proven to meet the requirements of each test in the UN Manual and of Tests Criteria, Part III, subsection 38.3. 6th (T1-T5, T7)

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4. FIRST AID MEASURES

In case of electrolyte leakage from the battery, necessary actions are described below.

Eye contact:	Flush the eyes with plenty of clean water such as tap water immediately, without rubbing. Seek medical treatment. If appropriate procedures are not taken, this may cause a loss of sight.
Skin contact:	Wash the contact areas off immediately with plenty of clean water such as tap water, otherwise it might cause irritation on the skin. If this chemical penetrates the clothing, immediately remove the clothing and flush the skin with water promptly. If irritation persists after washing, get medical attention.
Inhalation:	Move the exposed person to area with fresh air immediately, and seek medical treatment.
Ingestion:	Get medical attention immediately

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel. Clear away any combustible substances from the fire area.

Extinguishing method:	Since vapor, generated from burning battery packs, make eyes, nose, and throat irritate, be sure to extinguish the fire on the windward side. Wear the respiratory protection equipment in some cases.
Fire extinguishing agent:	Plenty of water, CO2, and foam are effective.
Special protective equipment for fire fighter:	Wear the respiratory protection equipment in some cases.

6. MEASURES FOR ELECTROLYTE LEAKAGE

In case of electrolyte leakage, move the battery packs away from the fire immediately. Avoid contact with spilled or released material. Immediately remove a contaminated clothing.

Personal precautions:	Remove any ignition sources nearby. Control of dust generation. May consider wearing sufficient ventilation/respiratory protection. Prevention of skin and eye contact with the chemical.
Environmental precautions:	Keeping away from drains, surface- and ground-water and soil. Alert the neighborhood if possible.
Method for cleaning up:	Use of absorbent material (e.g. sand, diatomaceous each, acid binder, universal binder, sawdust, etc.), reduction of gases/fumes with water, dilution.
Note:	Refer to heading 8 for exposure control Refer to heading 13 for disposal consideration

7. HANDLING AND STORAGE

Handling:	When packing the battery packs, do not allow terminals to contact each other, or contact with other metals. Avoid improper handling of the packaging box so as not to drop or damage it. Do not disassemble or reconstruct, swallow, incinerate or heat the product. Avoid use or leave product nearby fire, stove or heated place. Do not immerse the product in water or sea water. Dispose of or recycle the product according to your local government law/regulations.
Storage:	Do not store the battery packs in places of high temperature exceeding 35◦or under direct sunlight as it will affect the battery performance only. Avoid places of high humidity, Be sure not to expose the battery pack to condensation, water drop or not to store it under frozen condition. When piling the pallets up or placing them in parallel, appropriate space between each pallet should be provided. Be sure to install suitable fire extinguishing equipment such as automatic fire extinguisher. Avoid storing the battery packs in places where it is exposed to static electricity so that no damage will be caused to the protection circuit of the battery pack.
Note:	Information in this section should relate to the protection of health, safety, and the environment. Please refer to Article 5 of Directive 98/24/EC for more details on safety handling and storage.

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8. EXPOSURE CONTROLS

Personal protective equipment: (in case of electrolyte leakage)

Respiratory Protection:	Protector with ventilator (in case of high concentration of gases), air breather
Hand Protection:	Suitability and durability of a glove is dependent on usage
Eye protection:	Goggles / mask
Protective clothing:	Use protective clothing which is chemical resistant
Facilities:	Provide appropriate ventilation system such as local ventilator in the storage place. Local exhaust ventilation is recommended. Firewater monitors and deluge systems are recommended. Eye washes and showers for emergency use
Note:	Refer to Article 4 of Directive 98/24/EC for more details on the health and safety of workers

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	The product is stored in the plastic resin case / PVC sleeves. Shape, size and color varies.
Odour:	No odor

Specific temperatures/temperature ranges at which changes in physical state occur:
There is no useful information for the product as a mixture

Flash point:	N/A
Explosion properties:	N/A

10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of use
Condition to Avoid:	Avoid impact, deconstruct, direct sunlight, high temperature, high humidity, sparks, open flames and other ignition sources
Materials to avoid:	Conductive materials, water, seawater, strong oxidizers and strong acids
Hazardous decomposition products:	Acrid or harmful fume is emitted during fire

11. TOXICOLOGICAL INFORMATION

In case of electrolyte leakage from the product

Irritation:	Irritating to eyes, skin, and throat
Sensitivity:	Sensitive to skin
Respiratory irritation:	Inhalation of vapours may cause irritation to the respiratory system

12. ECOLOGICAL INFORMATION

Since a battery cell and the internal materials remain in the environment, do not bury or throw out into the environment.

13. DISPOSAL CONSIDERATIONS

When the battery is worn out, dispose of it under the ordinance of each local government or the law issued by relating government.

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14. TRANSPORT INFORMATION

During the transportation of a large amount of battery packs by sea, air, trailer, or railway, do not leave them in place of high temperatures and do not allow them to be exposed to condensation. Confirm no leakage and no over-spilt from a container. Properly store cargo to prevent falling, dropping and breakage. Prevent collapse of cargo piles and wet by rain. The container must be handled carefully. Do not give shocks that result in a mark of hitting on the product. Please refer to heading 7 also.

Packaging:

1) Package <= 12 packs
a. Packed in strong boxes
b. Packed in a way to prevent short circuits

2) Package > 12 packs
1. Packed in strong packaging marked to say that it contains Lithium Ion Batteries
2. Accompanied by a document indicating that the package contains lithium Ion batteries
3. Be capable of withstanding 1.2metre drop test in any orientation without short circuiting, damage or release
4. Maximum 10 Kg gross weight

Air Shipment:

1) Section IB of Packing Instruction PI965:-
2) Each battery mentioned above is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria, Part III, subsection 38.3. 6th
3) Each package is withstanding a 1.2m drop test and without:
a) damage to cells or batteries contained therin;
b) shifting of the contents so as to allow battery to battery (cell to cell) contact;
c) release of contents
4) Watt-hour rating is not more than 100Wh.
5) Quantity per package is less than 10 kg (gross)
6) Each battery is not charged more than 30%

Sea Shipment:

Our "Lithium Ion batteries" can be shipped because we meet the requirement under IMO-IMDG Code Special Provision 188 & 230:-
Each battery is of the type proven to meet the requirement of each test in the UN Manual of Tests and Criteria, Part 111, sub-section 38.3. 6th

Regulation depends on region and transportattion mode
Worldwide, air transporation:

IATA-DGR 60th edition [As non-DANGEROUS GOODS: " packing instruction 965 section II" / Almost as above however displayed as DANGEROUS GOODS: " packing instruction 965 section IB "] (When batteries are packaged with equipments or contained in equipments, refer packing instruction 966 or 967 instead of 965.)

15. REGULATORY INFORMATION

Regulation specifically applicable: Regulation (EC) No 1272/2008

16. OTHER INFORMATION

The information contained in this Safety data sheet is based on the present state of knowledge and current legislation. This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.

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