MATERIAL SAFETY DATA SHEET

Model: 053046A, 063450A

Prepared by	Checked by	Approved
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MYD MATERIAL SAFETY DATA SHEET

Product Name **Lithium -Ion Polymer**

1.Product Identification;

Product Name **Lithium-Ion Polymer**

Company of Producing MD TECHNOLOGY LIMITED

2.Composition/Information on Ingredients(**Lithium-Ion Polymer**)

Composition	Wt %
Lithium Cobalt Oxide	30-34
PVDF	1.5-2.5
Carbon	16-17
PTFE	0.8-1.2
Electrolyte(EC/DEC/lmolLipF6)	13-14
PP+PE	1.5-2.5
Copper	10-11
Aluminum	0.5-0.56
Nickel	0.06-0.08

3. Hazard Identification

Material	Emergency Overview (Appearance)	Toxicity (Potential Health Effects)
Lithium Cobalt Oxide	Blue-Black Powder (odorless)	Cobalt and Cobalt compounds are considered to be possible human Carcinogen(s)By.IARC:May irritate eyes, skin, nose, throat,and respiratory system May cause allergic skin sensitization(rash).
Carbon	Black Powder (odorless)	No cases of carbon being harmful to humans have been reported. WHO and ILO have never verified that carbon irritation of the skin and mucous membrane,etc In some individuals.
Bond	Odorless White Powder	Inhalation and skin contact are expected to be the primary routes of occupational exposure to this material As a finished product,it is a synthetic,high molecular weight polymer,due to its chemical and physical properties,this material dos not

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require special handing other than the good industrial hygiene and safety practical PROCEESING employed with any industrial material of this type. Under normal processing conditions,this material release fame or vapor components of these release may vary with processing time and temperatures. These process releases may produce eye,skin and/or respiratory tract irritation and,with repeated or prolonged exposures,nausea,drowsiness,headache

	RESPIRATORY TRACT IRRITATION	and weakness Although unlikely under normal handling conditions, if this material is heated in excess of 600F(315C) Hazardous,decomposition products will be Produced, hazardous decomposition products include hydrogen fluoride and oxides of carbon, the concentrations of which vary with temperature and heating regimens.
Electrolyte	Colorless Liquid WARNING FLAMMABLE REACTS WITH WSTER TO FROM HYDROFLUORIC ACID MAY CAUSE BURNS TO SKIN AND EYES EFFECTS MAY BE DELEYED. MAY CAUSE BLINDNESS PROBABLE REPRODUCTIVE HAZARD	May cause moderate to severe irritation, butting and dryness of the skin. May cause eye irritation or burning. Breathing of the mists,vapors or fumes may irritate the nose,throat and lungs or fumes may irritate the nose throat and lungs Exposure of material with areas which contain water may generate hydrofluoric acid which can cause immediate burns on skin,severe eye bums burns to the mouth and gastrointestinal tract if ingested,and laryngeal edema if inhaled.Direct exposure to areas of the body need to be treated immediately to prevent injury.

4.First Aid Measures

Eyes:Flush with water for at least 15 minutes.If irritation occurs and persists,contact a medical doctot.

Skin:Remove contaminated clothing and thoroughly wash with soap and plenty of water.If irritation persists,contact a medical doctor.

Inhalation:Remove to fresh air.If breathing difficulty or discomfort occurs and persists,see a medical doctor.If breathing has stopped,give artificial respiration and see a medical doctor IMMEDIATELY.

5.Fire Fighting Measures

Hazardous Combustion Products:When burned,hazardous produets of combustion including fumes of carbon monoxide,carbon dioxide,and fluorine can occur.

Extinguishing Media:Water,carbon dioxide,dry chemical,or foam.

Basic Fighting Procedures:Wear NIOSH/MSHA approved positive pressure self contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Unusual Fire&Explosion Hazards:This material does not represent an unusual fire or explosion hazard.

Flash Point:38℃(CC)(100F)

Autolgnition Temperature: No Data.

Flammatility Limits in Air,Lower,%by volume:1.4

Llammability Limits in Air,Upper, %by volume:11

6.Accidental Release Measures

Procedure for Release and Spill:

Sweep up and place in a suitabli container,Dispose or waste according to all local,state and Federal Laws and Regulations.

7.Handling and storage

Handling:Avoid contact with eyes,skin or clothing,use with adequate ventilation.Wear safety glasses and rubber gloves.Wash thoroughly after handling.

Material	Storage
Lithium Cobalt Oxide	Keep away from strong acids.Keep container closed.
Carbon	Store this material in a sealed enclosure to avoid dispersion of carbon fiber dust,Keep container closed.
Bond	Store in a cool,dry place.This material is not hazardous under normal storage condition; however,material should be stored in closed container,in a secure area to prevent container damage and subsequent spillage.
Electrolyte	Store in tightly closed containers in a cool ,dry,isolated,well-ventilated area away from heat,sources of ignition and in compatibles.Store in original container.Keep from freezing. Avoid exposure to high temperatures

8.Exposure Controls/Person Protection.

Engineering controls: Investigate engineering techniques to reduce exposures use with adequate ventilation a Recommended personal protectjve Equipment.

Eye/Face protection: Use good industrial practice to avoid eye contact,Processing of this product releases vapors or fumes which may cause eye irritation.Where eye contact may be likely wear chemical goggles and have eye flushing equipment available.

Skin protection: Minimize skin contamination by following good industrial hygiene practices Wearing protective gloves is recommended Wash hands and contaminated skin thoroughly after handling.

Respiratory protection: Avoid breathing dust and processing vapors When adequate ventilation is not available wear a NIOSH/MSHA respirator approved for protection against inorganic dusts.

Special clothing: Robber gloves.

Other: Quick-drench eye wash and safety shower.

9.Physical and Chemical Properties

Material	Appearance	Odor	Molecular Weight	Vapor Pressure
LiCoO2	Solid, Blue-Black Powder	Odorless	7.32	-
Carbon	Black Powder	Odorless	3.46	-
PTFE	Latex	Odorless	-	-
PVDF	Powder	Odorless	-	-
Copper	Metal	Odorless	2.10	-

Electrolyte (EC/DEC/EMC /lmolLiPF6)	Colorless Liquid, Volatile	with a mild organic odor	-	-

Material	Sublimating Point	Freezing Point/ Melting Point	Solubility in water	Density (Specific Gravity)
LiCoO2	-	>1000 deg.C (1280 deg.F)	Insoluble	-
Carbon	3000℃ or more	-	Insoluble	2.2g/ml
PTFE	-	-	Soluble	-
PVDF	-	165-172℃	Negligible	1.76-1.80 g/ml
Copper	-	1083℃	Insoluble	8.96 g/ml
Nickel	-	1555℃	Insoluble	8.91 g/ml
Aluminum	-	660℃	Insoluble	2.7 g/ml
Electrolyte (EC/EMC/DEC/lmolLiPF6)	126℃	-	Partial	1.22(20/20℃) WATER=1

10. Stability and Reactivity

Material	Stability	Incompatibility	Hazardous Polymerization	Hazardous Decomposition Products
LiCoO2	Stable	Acids	Dose not polymerize	None
Carbon	Stable	Strong oxidants	-	-
Bond	Stable	Strong base,ester, Ketones,Sillca, Titanium.	Dose not occur	HF, possible oxides of carbon
Electrolyte	Volatile	Strong reducers, bases, strong acids, oxidizing agents, moist air or water.	Will not occur	Volatile pentafluoride compounds, Hydrogen fluoride,carbon monoxide Carbon dioxide and other Decomposition product etc.

11.Ecological Information

Eco Toxicological Information: No information available.
Chemical Fate Information: No data are available.
Environmental Effects: No data are available.

12. Disposal Information

Ensure disposal of material in compliance with all local.State and Federal-Laws and Regulations.

The material safety data sheet is furnished to every manufacturer as a reference to secure the safe handling of chemical.Every manufacturer is requested to carry out appropriate actions for chemical handling as their own responsibility. The supplier makes no warrantee,either express or implied concerning of this product. User assumes all risks resulting from its use.

13.STABILITY AND REACTIVITY

Thermal Decomposition	Cells will vent and release hazardous decomposition products When exposed to fire.
Hazardous Combustion products	Carbon monoxide, carbon dioxide, lithium and cobalt oxides, hydrogen fluoride.
Explosion	Each cell is fitted with a pressure release safety device, which Will release electrolyte rendering the cell inactive and preventing an explosion.

14.TOXICOLGICAL PROPERTIES

Signs and Symptoms	None unless cell ruptures.
Route of Entry	If electrolyte released-Anticipated routes of entry, eye, skin contact and inhalation.
Route of Acute Exposure	Electrolyte vapour is irritating to the pulmonary tract
Effect of chronic Exposure	Electrolyte vapour in large volumes may cause suffocation and pulmonary oedema
Irritancy	Yes

15.DISPOSAL CONSIDERATIONS

Dispose of as hazardous waste and in accordance with appropriate local waste regulations.

16.TRANSPORT INFORMATION

International transport regulations: 1. U.S. hazardous materials regulations pursuant to 49 CFR 173.185(b),
2. 2012 IATA Dangerous Goods Regulations 53th edition.
3. IMDG Code pursuant to Special Provision 188. 49 CFR 173.185(b)

UN-No.: STR10098063S or STR10098064S

Each MD TECHNOLOGY LIMITED cell or battery complies with the current edition – 53th 2012 of the IATA regulation:

1) Section II of Packing Instruction

PI965~PI967 ,For li-ion cells or batteries, or packed with equipment, or contained in equipment.

2) UN manual of Tests and Criteria, Part III, sub-section 38.3 (withstanding a 1.2m drop test);

3) For cells with content of lithium is no more than 20Wh , for batteries with content of lithium is no more than 100Wh per battery. The watt-hour rating must be marked on outside of the battery case.

If MD TECHNOLOGY LIMITED lithium-ion Battery cells are used to construct battery packs, the assembler of that pack is responsible to ensure the battery has been tested in accordance with the requirements contained in the UN Manual of Tests and Criteria and shipped in accordance with applicable regulations.

Batteries must be packaged and offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals) and protects against short circuits.

17.REGULATORY INFORMATION

	CHIP Classification	EC Risk Phrases	
Lithium cobalt(III) Oxide	Xn	R 42/43	May cause sensitization by Inhalation and skin contact
		S 36	Wear suitable protective Clothing
Carbon	Mark as: Irritating	R36/37	Irritant to eyes &respiratory system.
		S24,S25,S26,S36	Avoid contact with skin, Avoid contact with eyes. In case of contact with eyes, rinse immediately with plenty Of water suitable protective clothing
Ethylene carbonate (1,3 dioxalan-2-one	Xi	R36	Irritating to eyes
		R41	Risk of serious damage to eyes
		S26	Risk of serious damage To eyes.
		S36/37/39	Wear suitable protective Clothing, gloves &eye/ Face protection
Di –Ethyl carbonate	Xi, F	R10	Flammable
		R36/37/38	Irritating to eyes, skin, Respiratory system
		S16,S26,S36	In case of contact with Eyes, rinse with plenty of water, seek medical advice. Keep away from Sources of ignition. Wear suitable protective clothes.
Lithium Hexafluorophosphate	T	R20/21/22	Harmful by inhalation, In contact with skin and If swallowed
		R24	Toxic in contact with Skin
		R34	Causes bums
		R36/37/38	Irritating to eyes, skin, Respiratory system
		S26	In case of contact with eyes, rinse immediately With plenty of water & Seek medical advice
		S36/37/39	Wear suitable protective Clothing, gloves & eye/ Face protection
		S45	In case of accident, or if You feel unwell, seek medical Advice immediately (show label If possible)

18.OTHER INFORMATION

MD TECHNOLOGY LIMITED Believes that information contained in this material safety data sheet (including data and statements) is accurate as of the date first mentioned. The information provided in each data sheet relates ONLY TO THE SPECIFIC PRODUCT DESIGNATED MD TECHNOLOGY LIMITED AND IS NOT VALID FOR ANY OTHER PRODUCT MANUFACTURED BY MD TECHNOLOGY LIMITED OR ANY OTHER PRODUCT MANUFACTURED BY ANY OTHER PARTY. It should be clearly understood that, the material safety data sheet may not be valid where such MD TECHNOLOGY LIMITED product is used in combination with any other materials of in any process. As the conditions and methods of use of the product and information referred to in such data sheet data sheet are beyond the control of MD TECHNOLOGY LIMITED, the material safety data sheet is provided for your consideration, investigation and verification. The information contained in this material safety data sheet herein is provided free of charge and on the understanding that those using it will fully satisfy themselves that their particular conditions of use or operation present no health or safety hazards. MD TECHNOLOGY LIMITED expressly disclaims any and all loss, damage, liability of expense arising out of or in any way connected with any use of the product or such information. NO statement made shall be construed as a permission or recommendation for the use of any product in a manner that might infringe existing patents. NO WARRANTY OF MD TECHNOLOGY LIMITED, FITNESS FOR ANY PARTICULAR PURPOSE OR ANY OTHER WARRANTY. EXPRESS OR IMPLIED, IS MADE AS CONCERNS THE INFORMATION PROVIDED BY MD TECHNOLOGY LIMITED OR MD TECHNOLOGY LIMITED AGENTS.