

MATERIAL SAFETY DATA SHEET

Product Name		Lithium Ion Battery
1. Product Identification;		
Product Name	Lithium Ion Battery	
Company of Producing	BYD	
2. Composition/Information on Ingredients (LP063465S)		
Composition	Wt%	
Lithium Cobalt Oxide	23-25	
PVDF	1.1-1.5	
Carbon	12-13	
PTFE	0.6-0.7	
Electrolyte(EC/EMC/DEC/1molLiPF6)	11-12	
PP+PE	2.5-3.5	
Copper	10-12	
Aluminum	3-4	
Nickel	0.2-0.3	
Steel	31-34	
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

CAUTION!
 MELT
 PROCESSING
 RELEASES
 VAPORS
 WHICH
 MAY
 CAUSE
 EYE,
 SKIN
 AND
 RESPIRATORY
 TRACT
 IRRITATION.

physical properties , this material dos not require special handing other than the good industrial hygiene and safety practical 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 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 FORM
 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, burring , 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 doctor.

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 products of combustion including fumes of carbon monoxide, carbon dioxide, and fluorine can occur

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

Basic Fire 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°C (CC) (100F)

Autolgnition Temperature: No Data.

Flammability Limits in Air, Lower, % by Volume: 1.4

Flammability Limits in Air, Upper, % by Volume: 11

6. Accidental Release Measures

Procedure for Release and Spill:

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

Before cleanup measures begin, review the entire MSDS with particular attention Potential Health Effects; and on Recommended Personal Protective Equipment.

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 protective 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
LiCoO ₂	Solid, Blue-Black Powder	Odorless	97.88	—
Carbon	Black Powder	Odorless	12.01	—
PTFE	Latex	Odorless	—	—
PVDF	Powder	Odorless	—	—
Copper	Metal	Odorless	63.55	—
Nickel	Metal	Odorless	58.69	—
Aluminum	Metal	Odorless	26.98	—
Electrolyte (EC/DEC/EMC /1molLiPF ₆)	Colorless Liquid, Volatile	with a mild organic odor	—	—

Material	Sublimating Point	Freezing Point/ Melting Point	Solubility in water	Density (Specific Gravity)
LiCoO ₂	—	>1000 deg.C (1280 deg.F)	Insoluble	—
Carbon	3000°C or more	—	Insoluble	2.2 g/ml
PTFE	—	—	Soluble	—
PVDF	—	165-172°C	Negligible	1.76-1.80 g/ml
Copper	—	1083°C	Insoluble	8.96 g/ml

Nickel	—	1555°C	Insoluble	8.91g/ml
Aluminum	—	660°C	Insoluble	2.7 g/ml
Electrolyte	126°C	—	Partial	1.22 (20/20°C)

(EC/EMC/DEC/1molLiPF6) WATER=1

10. Stability and Reactivity

Material	Stability	Incompatibility	Hazardous Polymerization	Hazardous Decomposition Products
LiCoO ₂	Stable	Acids	Dose not polymerize	None
Carbon	Stable	Strong oxidants	—	—
Bond	Stable	Strong base, ester, Ketones, Silica, 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.

Last data revised 2003/01/14

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 products. User assumes all risks resulting from its use.

For more information contact:

Technology Manager

Yan An road, Kuichong

Longgang Shenzhen ,518119 ,

P.R .China

Tel: +86-755-84218888

Fax: +86-755-84202222

<http://www.byd.com.cn>