

# MATERIAL SAFETY DATA SHEET

Document No.: KMP - JK04006

February.3.2004

<b>SECTION 1 - PRODUCT IDENTIFICATION AND USE</b>				
Product: <b>Cobalt type Prismatic Lithium-ion cell (Aluminum case)</b>				
Use: High performance lithium-ion rechargeable battery system				
Manufacturer: NEC TOKIN Tochigi, Ltd. 484, Harigaya-machi, Utsunomiya-shi Tochigi, 321-0147, Japan TEL: +81-28-655-6522 FAX: +81-28-653-2450				
<b>SECTION 2 - HAZARDOUS INGREDIENTS</b>				
Hazardous Ingredients	%	CAS Number	LD <sub>50</sub> (mg/kg) (oral-rat)	LC <sub>50</sub> (mg/L)
Aluminum	15-25 w/w	7429-90-5	N/AV	N/AV
Carbon, amorphous, powder	0.1-1 w/w	7440-44-0	440 (ivn-mouse)	N/AV
Copper foil	5-15 w/w	7440-50-8	3.5 (ipr-mouse)	N/AV
Diethyl Carbonate (DEC)	1-10 w/w	105-58-8	8500	N/AV
Ethylene Carbonate (EC)	1-10 w/w	96-49-1	10000	N/AV
Methyl Ethyl Carbonate (MEC)	1-10 w/w	623-53-0	>5000	N/AV
Lithium Hexafluorophosphate (LiPF <sub>6</sub> )	1-5 w/w	21324-40-3	1702	Rat: >20
Graphite, powder	10-30 w/w	7782-42-5	N/AV	N/AV
Lithium Cobalt Oxide (LiCoO <sub>2</sub> )	25-45 w/w	12031-65-1	N/AV	N/AV
Poly (vinylidene fluoride) (PVDF)	0.5-2 w/w	24937-79-9	N/AV	N/AV
Steel	Balance	7439-89-6	N/AV	N/AV
Nickel and inert polymer	Balance	N/APP	N/APP	N/APP

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<b>SECTION 3 - PHYSICAL DATA</b>				
Physical state: Nickel plated metal or aluminum canister	Odour: None	Odour threshold: N/APP	Vapor pressure (mmHg) N/APP	Vapor Density (air = 1) N/APP
Evaporation rate: N/APP	Boiling Point: N/APP	Freezing point: N/APP	PH (10% in water): N/APP	
Specific gravity: 1.5 - 2.0	Coeff. of water/oil distribution: N/APP	Water solubility: insoluble	Percent Volatiles: NONE	
<b>SECTION 4 - FIRE AND EXPLOSION DATA</b>				
Flammability NO	Conditions: Organic components will burn if cell incinerated. Combustion of cell contents will cause evolution of Hydrogen Fluoride.			
Means of Extinction and special Procedures: Water spray, Carbon dioxide, Dry chemical powder or appropriate foam. Use agent appropriate for surrounding materials. Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Extremely corrosive Hydrogen fluoride gas is produced upon combustion of cell contents.				
Flashpoint: NONE	Upper Flammable Limit: NONE	Lower Flammable Limit: NONE		
Auto-ignition Temp.: NONE	Hazardous Combustion Products: Hydrogen Fluoride, Phosphorous Oxides, Carbon Monoxide, Carbon Dioxide, Lithium Hydroxide, Manganese Dioxide, Aluminum Oxide, possible fluoro-compounds, Carbon soot			
Impact sensitive: NO	Static discharge Sensitive: NO, but cell may contain up to 4.2 volts.			
<b>SECTION 5 - REACTIVITY DATA</b>				
Stability: STABLE	Hazardous polymerization will not occur. Spontaneous decomposition at normal temperatures will not occur.			
Incompatibilities: Do not crush, puncture, incinerate, immerse in water or heat over 125 °C. Steel or aluminum casing slowly dissolves in strong mineral acids.				
Reactivities: None known				
Hazardous Decomposition Products: Hydrogen Fluoride, Carbon Monoxide, Carbon Dioxide, Lithium Hydroxide, Manganese Dioxide, Nickel Oxide, Cobalt Oxide, Aluminum Oxide, possible fluoro-compounds, Carbon soot				

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<b>SECTION 6 - TOXICOLOGICAL PROPERTIES</b>			
Routes of Entry: Skin Contact: NO Skin Absorption: NO Eye contact: NO Inhalation: NO Ingestion: NO			
Acute Exposure			
Skin:		No effect noticed in routine handling of product.	
Eyes:		The bulk solid has no effect on the eye.	
Inhalation:		Not applicable.	
Ingestion:		Ingestion is not likely, given the physical size and state of the cell.	
Chronic Exposure			
Skin:		Not anticipated.	
Eyes:		Not applicable.	
Inhalation:		Not applicable.	
Ingestion:		Ingestion is not a likely exposure route.	
Exposure Limits:	Irritancy:	Sensitization:	Carcinogenicity:
None listed	None	Not anticipated	Not anticipated
Teratogenicity:	Mutagenicity:	Reproductive toxicity:	Synergistic Products:
Not anticipated	Not anticipated	Not anticipated	None expected
<b>SECTION 7 - PREVENTIVE MEASURES</b>			
Personal protective equipment:			
Gloves: Not required for handling individual cells. Fabric gloves for warehouse container handling.			
Respirator: No respirator required for normal handling. SCBA required for fires.			
Eyewear: Not required beyond employer policy.			
Clothing: Standard industrial clothing in normal use. Impervious suit in fires.			
Footwear: Wear steel toed footwear if large containers of cells are being handled.			
Engineering controls: Keep away from heat and open flames. Store in a cool, dry place.			

