SYNERGY SCIENTECH CORP. -- Advanced Hybrid Batteries

MATERIAL SAFETY DATA SHEET

Manufacturer's CAGE: SYNERGY

Part No. Indicator: A

Part Number/Trade Name: AHB Series- Lithium ion Polymer batteries.

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1. General Information

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Company's Name: SYNERGY SCIENTECH CORP.

Company's Street: 5F, No3, R&D Rd.II, SCIENCE-BASED INUSTRIAL PARK

Company's City: HSIN-CHU, TAIWAN

Company's Emerg Ph #: 886-3-564-3700

Company's Info Ph #: 886-3-564-3700

Record No. For Safety Entry: 001

Tot Safety Entries This Stk#: 001

Status: SMJ

Date MSDS Prepared: January 1, 2012 (Sixth Edition)

Safety Data Review Date: January 1, 2012

MSDS Preparer's Name: Dr. Kevin Shy

Preparer's Company: SAME

MSDS Serial Number: LIASN

Product: AHB series

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2. Ingredients/Identity Information

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Material Name. (e.g. Sn alloy)	Substance Name (e.g. Copper (Cu))	CAS No.	Percentage (%)
active material	LiCoO2	12190-79-3	32.61
Binder-PVDF	Poly(vinyliden difluoride)	24937-79-9	1.04
conditive material	Carbon	1333-86-4	0.78
conditive material	Carbon	1333-86-4	0.26
foil	Aluminium	7429-90-5	4.61
active material	Carbon	1333-86-4	15.92
Binder-PVDF	Poly(vinyliden difluoride)	24937-79-9	1.3
conditive material	Carbon	7440-44-0	0.09
additive	Oxalic acid	00144-62-7	0.05
foil	Copper	7440-50-8	7.87
electrolyte-solvent	Ethylene carbonate	96-49-1	5.06
electrolyte-solvent	Diethyl carbonate	105-58-8	3.73
electrolyte-solvent	Ethyl methyl carbonate	623-53-0	3.83
electrolyte-additive	Lithium hexafluorophosphate	21324-40-3	1.82
separator	polyethylene		3.62
tape-film	polyimide		0.1
tape-adhesive	Acrylic		0.03

tape-film	polyester		0.14
tape-adhesive	Acrylic		0.03
Al bag	Nylon		3.85
Al bag	Aluminium	7429-90-5	9.75
Al bag	Polypropylene		2.57
tab lead	Nickel	7440-02-0	0.38
tab lead	polyproplene		0.05
tab lead	Aluminium		0.24
tab lead	polyproplene		0.05
tab	Nickel	7440-02-0	0.22

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3. Hazards Identification

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Route Of Entry - Inhalation: YES

Route Of Entry - Skin: YES

Route Of Entry - Ingestion: YES

Health Haz Acute And Chronic: UNDER NORM CNDTNS OF USE, THESE CHEMICALS ARE CONTAINED IN SEALED CAN. RISK OF EXPOS OCCURS ONLY IF BATTERY IS MECHANICALLY ABUSED. ACUTE: INHAL: CONTENTS OF OPENED BATTERY CAN CAUSE CONTENTS OF OPENED BATTERY CAN CAUSE IRRIT.

Carcinogenicity - NTP: NO

Carcinogenicity - IARC: NO

Carcinogenicity - OSHA: NO

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4. First Aid Measures

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Explanation Carcinogenicity: NOT RELEVANT.

Signs/Symptoms Of Overexp: SEE HEALTH HAZARDS.

Med Cond Aggravated By Exp: NONE SPECIFIED BY MANUFACTURER.

WASH WITH SOAP AND WATER. EYES: IMMEDIATELY FLUSH THOROUGHLY WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. SEEK MEDICAL ATTENTION. INGESTION: CALL MD IMMEDIATELY (FP N).

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5. Fire Fighting Measures

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Extinguishing Media: IN CASE OF FIRE, USE CARBON DIOXIDE OR DRY CHEMICAL EXTINGUISHERS.

Special Fire Fighting Proc: WEAR NIOSH APPROVED SCBA & FULL PROTECTIVE EQUIPMENT (FP N).

Unusual Fire And Expl Hazrds: NONE SPECIFIED BY MANUFACTURER.

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6. Accidental Release Measures

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Wear appropriate personal protective equipment. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

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7. Handling and Storage

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Wear suitable chemical resistant gloves, safety glasses and filtered cartridge respirator. Goggles, full face protection and other protective clothing is required if potential exists for direct exposure to liquid battery electrolyte.

In case Material is released or spilled: Carefully recover spillages with appropriate ladle and transfer to a suitably labeled, sealable container for safe disposal. Wash the spillage area neutorize with calclumhydroxide. Wear suitable personal protection during removal of spillages.

Be stored in clearly labeled, tightly closed exclusive containers in a cool, dry area.

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8. Exposure Controls/Personal Protection

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Ventilation: Use local exhaust.

Protective Gloves: Wear rubber or plastic gloves.

Eye/Face Protection: Wear safety glasses, goggles or full face protections.

Respiratory Protection: Wear filtered cartridge respirator or a respirator of greater protection.

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9. Physical and Chemical Properties

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Product Type: Solid

Appearance: Prismatic

Odor: Odorless

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10. Stability and Reactivity

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Stability: YES

Cond To Avoid (Stability): NONE SPECIFIED BY MANUFACTURER.

Materials To Avoid: NONE SPECIFIED BY MANUFACTURER.

Hazardous Decomp Products: NONE SPECIFIED BY MANUFACTURER.

Hazardous Poly Occur: NO

Conditions To Avoid (Poly): NOT RELEVANT.

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11. Toxicological Information

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In case electrolyte is spilled and explored with air, the HF could be released.

May include hydrogen fluoride and carbon oxides gas.

May cause skin and eye irritation when contacted.

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12. Ecological Information

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If the battery scrapped, it should be selected and disposed by professional company.

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13. Disposal Consideration

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Disposal should be in accordance with local, state or national legislation.

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14. Transport Information

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UN No: UN3480

Ground (DOT)	Air transport(IATA/ICAO)	Sea transport(IMDG)
Non-Harzardous	UN3480	UN3480
	Lithium ion polymer batteries	Lithium ion polymer batteries
	Class 9, Packing group Ⅱ	Class 9, Packing group Ⅱ

The battery models listed have aggregate equivalent lithium content below the 8g and the Watt hour is not more than 100Wh. And shipment contains no item listed under Excepted Lithium Batteries as per Special Provision 188 of ocean transportation IMDG Code (IMDG Code: International Maritime Dangerous Goods Code) and meets all requirements under UN Manual of Tests and Criteria Part III, subsection 38.3

UN 38.3 Lithium Battery		Test results	Remarks
NO	Test item	OK	Test 1 to 5 must be conducted in sequence on the same cell or battery
T1	Altitude simulation	OK	
T2	Thermal test	OK	
T3	Vibration	OK	
T4	Shock	OK	
T5	External short circuit	OK	
T6	Impact	OK	
T7	Overcharge	OK	Only battery do need this test item
T8	Forced discharge	OK	For cell only

The product is not classified as dangerous under the current edition of the 2012 IATA dangerous goods regulations. The products are safe for air transportation and not regulated by IATA DGR. Also they comply with the Section II of PI-965 accordingly.

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15. Regulatory Information

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See ACGIH exposure limits information as noted in Section 3.

US: This MSDS meets/exceeds OSHA requirements

International: this MSDS conforms to European Union (UN), the International Standards Organization (ISO) and the International Labor Organization (ILO) and as documental in ANSI (American National Standards Institute) Standard Z400.1-1993.

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16. Other Information

Test Requested	:	In accordance with the RoHS Directive 2002/95/EC, and its amendment directives.
Test Method	:	With reference to IEC 62321, Ed.1 111/54/CDV Procedures for the Determination of Levels of Regulated Substances in Electrotechnical Products. (1) Determination of Cadmium by ICP-AES. (2) Determination of Lead by ICP-AES. (3) Determination of Mercury by ICP-AES. (4) Determination of Hexavalent Chromium for non-metallic samples by UV/Vis Spectrometry. (5) Determination of PBB and PBDE by GC/MS.

Test Item (s):	Method (Refer to)	Result No.1	MDL
Cadmium (Cd)	(1)	n.d.	2
Lead (Pb)	(2)	n.d.	2
Mercury (Hg)	(3)	n.d.	2
Hexavalent Chromium Cr(VI) by alkaline extraction	(4)	n.d.	2
Sum of PBBs	(5)	n.d.	-
Monobromobiphenyl		n.d.	5
Dibromobiphenyl		n.d.	5
Tribromobiphenyl		n.d.	5
Tetrabromobiphenyl		n.d.	5
Pentabromobiphenyl		n.d.	5
Hexabromobiphenyl		n.d.	5
Heptabromobiphenyl		n.d.	5
Octabromobiphenyl		n.d.	5
Nonabromobiphenyl		n.d.	5
Decabromobiphenyl		n.d.	5
Sum of PBDEs (Mono to Nona) (Note 4)		n.d.	-
Monobromobiphenyl ether		n.d.	5
Dibromobiphenyl ether		n.d.	5
Tribromobiphenyl ether		n.d.	5
Tetrabromobiphenyl ether		n.d.	5
Pentabromobiphenyl ether		n.d.	5
Hexabromobiphenyl ether		n.d.	5
Heptabromobiphenyl ether		n.d.	5
Octabromobiphenyl ether		n.d.	5
Nonabromobiphenyl ether		n.d.	5
Decabromobiphenyl ether		n.d.	5
Sum of PBDEs (Mono to Deca)		n.d.	-

Reference:

Chemical substances information: Japan Advanced Information center of Safety and Health

International Chemical Safety Cards (ICSCs): International Occupational Safety and Health Information Centre (CIS)

2002 TLVs and BELs: American Conference of Governmental Industrial Hygienists (ACGIH)

Dangerous Goods Regulations-53nd Edition Effective 1 January 2012: International Air Transport Association (IATA)

IMDG Code-2008 Edition: International Maritime Organization (IMO)

The European Agreement concerning the International Carriage of Dangerous Goods by Road-2009: The United Nations Economic Commission for Europe (UNECE)

MSDS of raw materials prepared by the manufactures