

Originating DCR		47456	REVISIONS		
REV	DESCRIPTION			DATE	APPROVED
P	Revised per DCR 54251 7/12/99 BY			7/12/99	BB
Q	Revised Safety Sheets and Obsolete Old Sheets per DCR 55678 7/2/03 DM			8/25/03	BB
R	Updated Battery MSDS to standard ANSI format per DCR 56456			02/18/05	BB
T	Remove reference to UN2800 in section 14 of MSDS per DCR 56484			03/11/05	BB
U	Correct Emergency Phone Number on MSDS per DCR 56538			5/2/05	BB
V	Change Revision Date on MSDS Sheets per DCR 57477			03/21/08	BB
W	Revise Per DCR58143 Add Hazard Ratings and added HMIS to Key Legend. CLW 03/16/10			3/24/10	BB

REFERENCE SPECIFICATION

				MarathonNorco Aerospace, Inc.				
				WACO, TEXAS				
APPROVALS	DATE		SAFETY DATA SHEETS					
ORIGINATOR LFL	07/08/88							
CHECKED								
APPROVED GHV	05/20/97		SIZE	FSCM	DWG NO	RS-95112	REV	W
DIST. CODE	14A		A	74025			SHEET 1 OF 4	

MATERIAL SAFETY DATA SHEET



8301 Imperial Drive
P.O. Box 8233
Waco, Texas 76714-8233
254-776-0650

Type of Data Sheet: New Revised

Revised: March 16, 2010

HMIS Ratings: **3 Health** **1 Flammability** **2 Reactivity**

SECTION 1 – PRODUCT AND COMPANY DESCRIPTION

MarathonNorco Aerospace, Inc.
8301 Imperial Drive
Waco, Texas 76712-6588

For Product Information:
254-776-0650

Product Name:
Battery, Storage

Emergency Phone Number:
USA: 800-424-9300
International: 11-1-703-527-3887

Trade Name:
Nickel Cadmium Battery

National Stock Class:
6140

SECTION 2 – CHEMICAL COMPOSITION

HAZARDOUS COMPONENT [SPECIFIC CHEMICAL IDENTIFICATION COMMON NAME(S)]	CAS NUMBER	% WEIGHT
Cadmium: as Cadmium	7440-43-9	6 - 15
and Cadmium Hydroxide	21041-95-2	6 - 15
Nickel: as Nickel	7440-02-0	20 - 36
and Nickel Hydroxide	12054-48-7	7 - 13
Cobalt : as Cobalt metal	7440-48-4	0.5 - 2
and Cobalt Hydroxide	21041-93-0	0.5 - 2
Potassium Hydroxide	1310-58-3	1 - 4
Lithium Hydroxide	1310-65-2	< 1

SECTION 3 – HAZARDS IDENTIFICATION

ROUTE OF ENTRY:	INHALATION	ABSORPTION	INGESTION
	Unlikely	Unlikely	No
HEALTH HAZARDS (ACUTE and CHRONIC):			
Under normal conditions of use, no exposure to hazardous components exists. If incinerated, inhalation of fumes may cause respiratory systems irritation, fumes will also irritate eye tissues (acute); chronic exposure may cause kidney dysfunction and lung injury.			
CARCINOGENICITY:	NTP	IARC MONOGRAPHS	OSHA REGULATED
	Not established for batteries	Not established for batteries	Not established for batteries
(NICKEL AND CADMIUM ARE LISTED AS POTENTIAL CARCINOGENS BY NTP, IARC, AND OSHA)			
SIGNS and SYMPTOMS of EXPOSURE:			
If incinerated, chest pain, coughing, sweating, chills, shortness of breath and weakness along with possible eye irritation.			
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:			
If incinerated, respiratory systems disorders, prostate disorders, liver and kidney disorders, vision problems.			

SECTION 4 – FIRST AID MEASURES

EMERGENCY FIRST AID PROCEDURES:

If contact with potassium hydroxide electrolyte, flush with water for 15 minutes and contact physician; if inhaled, remove from exposure and contact physician.

SECTION 5 – FIRE FIGHTING MEASURES			
FLASH POINT (METHOD USED)	FLAMMABLE LIMITS	LEL	UEL
None	Non-Flammable	N/A	N/A
EXTINGUISHING MEDIA Use extinguishing media appropriate for surrounding fire.			
SPECIAL FIRE FIGHTING PROCEDURES Fire fighters should wear proper protective equipment and self-contained breathing apparatus with full face-piece operated in positive pressure mode.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Contact with strong oxidizers may cause fire or explosion. Cadmium and Nickel fumes are toxic and can cause death.			

SECTION 6 – ACCIDENTAL RELEASE
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Battery and cell cases will normally contain materials of concern. Use industrial absorbent to collect liquid potassium hydroxide.

SECTION 7 – HANDLING AND STORAGE
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Do not invert. Avoid breaking crushing or otherwise destroying the physical integrity of the cell or battery. Store in cool, dry place.

SECTION 8 – EXPOSURE CONTROLS AND PERSONAL PROTECTION
Under normal conditions of use, no special personal protection is required. Use adequate local exhaust ventilation when handling the liquid in the battery, i.e., potassium hydroxide solution. Wear a dust or mist mask, eye goggles and face shield, rubber gloves and protective clothing to minimize skin contact.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES									
Chemical	Boiling Point (°C)	Specific Gravity	Vapor Pressure	Melting Point (°C)	Vapor Density	Evaporation Rate	Solubility in Water	Odor	Appearance
Cadmium	407	8.642	N/A	160.5	N/A	N/A	Insoluble	None	Silver Color Metal
Cadmium Hydroxide	N/A	4.79	N/A	Decomp. 300	N/A	N/A	Insoluble	None	White Salt
Nickel	1449	8.90	N/A	790.5	N/A	N/A	Insoluble	None	Silver Color Metal
Nickel Hydroxide	N/A	4.15	N/A	Decomp. 230	N/A	N/A	Insoluble	None	Green Black Salt
Cobalt	3100	8.9	N/A	1493	N/A	N/A	Insoluble	None	Steel Gray Metal
Cobalt Hydroxide	N/A	3.597	N/A	Decomp 250	N/A	N/A	Insoluble	None	Rose-Red Powder
Potassium Hydroxide	716.6	2.044	N/A	182.2	N/A	N/A	52% W/W	None	White Salt
Lithium Hydroxide	Decomp. 924	2.54	N/A	470	N/A	N/A		None	White Salt

SECTION 10 – STABILITY AND REACTIVITY			
STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	N/A
INCOMPATIBILITY (MATERIALS TO AVOID) Strong oxidizing agents, nitrates, nitric acid.			
HAZARDOUS DECOMPOSITION OR BY-PRODUCTS Nickel Compounds, Cadmium Compounds, Caustic Liquid			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	N/A

SECTION 11 – TOXICOLOGICAL INFORMATION

HAZARDOUS COMPONENT [SPECIFIC CHEMICAL IDENTIFICATION COMMON NAME(S)]	OSHA PEL	ACGIH TLV	CAS NUMBER
Cadmium: as Cadmium	5 µg/m ³ (Dust)	0.01 mg/m ³	7440-43-9
and Cadmium Hydroxide	5 µg/m ³ (as Cd)	0.05 mg/m ³	21041-95-2
Nickel: as Nickel	1 mg/m ³	1 mg/m ³	7440-02-0
and Nickel Hydroxide	1 mg/m ³	0.2 mg/m ³	12054-48-7
Cobalt : as Cobalt metal	0.1 mg/m ³	0.02 mg/m ³ TWA	7440-48-4
and Cobalt Hydroxide	0.1 mg/m ³	0.02 mg/m ³ TWA	21041-93-0
Potassium Hydroxide	2 mg/m ³ (Ceiling)	2 mg/m ³ (Ceiling)	1310-58-3
Lithium Hydroxide	Not Established	Not Established	1310-65-2

SECTION 12 – ECOLOGICAL INFORMATION

Cadmium and Cadmium Compounds are very toxic to aquatic organisms, may cause long-term adverse effects in aquatic environment. Avoid release to the environment.

SECTION 13 – DISPOSAL INFORMATION

WASTE DISPOSAL METHOD

Nickel-Cadmium storage batteries are universal waste under RCRA Regulations. They should be recycled and may be returned to MarathonNorco Aerospace, Inc. for recycling.

If not recycled, they must be disposed of in accordance with all federal, state, and local hazardous waste regulations.

SECTION 14 – TRANSPORT INFORMATION

SHIPPING NAME

- Battery, Dry For transportation purposes these sealed nickel-cadmium batteries are non-hazardous and not subject to any of the provisions of Title 49 Code of Federal Regulations, Parts 170-189
- Battery, Wet Filled with alkali UN2795

SECTION 15 – REGULATORY INFORMATION

FEDERAL REGULATIONS

TSCA Status: The intentional ingredients of this product are listed

CERCLA RQ – 40 CFR 302.4(a)	Component	RQ (lbs)
	Cadmium	1
	Cadmium Hydroxide	1
	Nickel	1
	Nickel Hydroxide	1
	Potassium Hydroxide	1000

SARA 302 Components – 40 CFR 355 Appendix A : None

Section 311/312 Hazard Class – 40 CFR 370.2

Immediate () Delayed (X) Fire () Reactive (X) Sudden Release of Pressure ()

SARA 313 Components – 40 CFR 372.65

Cadmium – CAS : 7440-43-9 Nickel – CAS : 7440-02-0

OSHA Process Safety Management - 29 CFR 1910 None Listed

EPA Accidental Release Prevention - 40 CFR 68 None Listed

SECTION 16 – OTHER INFORMATION

Key Legend Information:

ACGIH – American Conference of Governmental Industrial Hygiene
CAS – Chemical Abstract Service
CERCLA – Comprehensive Environmental Response Compensation and Liability Act
RCRA – Resource Conservation and Recovery Act
EPA – Environmental Protection Agency
IARC – International Agency on Research of Cancer
HMIS- Hazardous Materials Identification System
OSHA – Occupational Safety and Health Administration

PEL – Permissible Exposure Limit
UEL – Upper Explosion Limit
TLV – Threshold Limit Value
TWA – Time Weighted Average
NTP – National Toxicology Program
LEP – Lower Explosion Limit
N/A- Not Applicable
CFR – Code of Federal Register