

SAFT AMERICA INC TRANSPORTATION DIV -- NICKEL-CADMIUM AIRCRAFT BATTERY --
6140-01-046-1116

===== Product Identification =====

Product ID:NICKEL-CADMIUM AIRCRAFT BATTERY

MSDS Date:07/05/1999

FSC:6140

NIIN:01-046-1116

Status Code:A

MSDS Number: CKDLB

=== Responsible Party ===

Company Name:SAFT AMERICA INC TRANSPORTATION DIV

Address:711 INDUSTRIAL BLVD

Box:1886

City:VALDOSTA

State:GA

ZIP:31601-188

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Country:US

Info Phone Num:912-245-2824

Emergency Phone Num:912-245-2824

Chemtrec Ind/Phone:(800)424-9300

CAGE:09052

=== Contractor Identification ===

Company Name:SAFT AMERICA INC.

Address:711 INDUSTRIAL BLVD

Box:1886

City:VALDOSTA

State:GA

ZIP:31602

Country:US

Phone:912-247-2331

Contract Num:DAAB07-97-C-G005

CAGE:09052

===== Composition/Information on Ingredients =====

Ingred Name:CADMIUM (AS CADMIUM, CADMIUM HYDROXIDE, AND CADMIUM OXIDE)

CAS:7440-43-9

RTECS #:EU9800000

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Wt:8.
OSHA PEL:SEE 1910.1027
EPA Rpt Qty:10 LBS
DOT Rpt Qty:10 LBS

Ingred Name:NICKEL (AS NICKEL, NICKEL HYDROXIDE, AND NICKEL OXIDE)
CAS:7440-02-0
RTECS #:QR5950000
= Wt:32.
OSHA PEL:1 MG/M3
ACGIH TLV:1 MG/M3

Ingred Name:POTASSIUM HYDROXIDE
CAS:1310-58-3
RTECS #:TT2100000
= Wt:19.
ACGIH STEL:C2 MG/M3
EPA Rpt Qty:1000 LBS
DOT Rpt Qty:1000 LBS

Ingred Name:COBALT HYDROXIDE (AS COBALT METAL)
CAS:7440-48-4
RTECS #:GF8750000
= Wt:1.
OSHA PEL:0.1 MG/M3
ACGIH TLV:0.02 MG/M3

Ingred Name:STEEL
= Wt:3
.4

===== Hazards Identification =====

LD50 LC50 Mixture:ORAL LD50(RAT): UNKNOWN.
Health Hazards Acute and Chronic:EYE-CONTACT WITH ELECTROLYTE SOLUTION
CAUSES VERY RAPID, SEVERE DAMAGE. EXTREMELY CORROSIVE TO EYE
TISSUES. MAY RESULT IN PERMANENT BLINDNESS. SKIN-CONTACT WITH
ELECTROLYTE SOLUTION MAY CAUSE SERIOUS BURNS TO SKIN TISSUES.
INGESTION-ELECTROLYTE SOLUTION CAUSES TISSUE DAMAGE TO THROAT AREA
& GASTRO/RESPIRATORY TRACT. INHALATION-

DURING ACTIVATION PROCEDURES

MIST GENERATED MAY CAUSE VARYING DEGREES OF IRRITATION TO THE NASAL MUCOUS MEMBRANES & RESPIRATORY TRACT TISSUES. VARYING FROM MILD IRRITATION OF NASAL MUCOUS MEMBRANES TO DAMAGE OF LUNG TISSUE PROPER.

Explanation of Carcinogenicity:NIOSH RECOMMENDS THAT NICKEL AND CADMIUM BE TREATED AS OCCUPATIONAL CARCINOGENA.

Effects of Overexposure:EYE EFFECTS: CONTACT WITH NICKEL OXIDE MAY CAUSE MINOR IRRITATION. SKIN EFFECTS: CONTACT WITH NICKEL
C

OMPOUNDS MAY CAUSE SKIN SENSITIZATION, RESULTING IN CHRONIC ECZEMA OR NICKEL ITCH. INGESTION: I NGESTION OF CADMIUM AND/OR NICKEL COMPOUNDS CAUSES NAUSEA AND INTESTINAL DISORDERS. INHALATION: INHALATION OF CADMIUM OXIDE MAY CAUSE DRY THROAT, COUGH, HEADACHE, VOMITING, CHEST PAIN, CHILLS, EXCESSI VE OVEREXPOSURE MAY RESULT IN PULMONARY EDEMA, BREATHING DIFFICULTY, PROSTATION, AND KIDNEY DAMAGE.

===== First Aid Measures =====

First A
id:EYE CONTACT: FLUSH WITH PLENTY OF WATER FOR AT LEAST 20 MINUTES. GET IMMEDIATE MEDICAL ATTENTION. SKIN CONTACT: REMOVE CONTAMINATED CLOTHING AND FLUSH AFFECTED AREA WITH PLENTY OF WATER FOR AT LEA ST 20 MINUTES. INGESTION: DO NOT INDUCE VOMITING. DILUTE BY GIVING LARGE VOLUMES OF WATER OR MILD. GET IMMEDIATE MEDICAL ATTENTION. DO NOT GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. INHALAT ION: REMOVE TO FRESH AIR. GIVE OXYGEN OR ARTIFICIAL RESPIRATION IF N
EDED. GET IMMEDIATE MEDICAN ATTENTION.
NICKEL OXIDE-SKIN CONTACT: WASH WITH COLD WATER AND SOAP.

===== Fire Fighting Measures =====

Extinguishing Media:CO2, SAND.

Fire Fighting Procedures:USE SELF-CONTAINED BREATHING APPARATUS TO AVOID BREATHING TOXIC FUMES. WEAR PROTECTIVE CLOTHING AND EQUIPMENT TO PREVENT POTENTIAL BODY CONTACT WITH ELECTROLYTE SOLUTION OR MIXTURE OF WATER AND ELECT ROLYTE SOLUTION. DISCONNECT OR CUT ALL CABLES TO A

ND FROM BATTERY ESPECIALLY GROUND CONNECTION.

Unusual Fire/Explosion Hazard:ELECTROLYTE SOLUTION IS CORROSIVE TO ALL HUMAN TISSUES. IT WILL REACT VIOLENTLY WITH MANY ORGANIC CHEMICALS, ESPECIALLY NITROCARBONS AND CHLOROCARBONS. ELECTROLYTE SOLUTION REACTS WITH ZINC, ALUM INUM, TIN AND OTHER ACTIVE MATERIALS RELEASING FLAMMABLE HYDROGEN GAS.

===== Accidental Release Measures =====

Spill Release Procedures:ELECTROLYTE SOLUTION SPILLS, SMALL(UP TO 5 GALLONS): FLUSH WITH WATER AND NEUTRALIZE WITH DILUTE CRITIC ACID. LARGE: CONTAIN MATERIAL IN SUITABLE CONTAINERS OR HOLDING AREA. DO NOT ALLOW MATERIAL TO ENTER SEWERS, STREAMS, OR STORM CONDUITS. RECOVER MATERIAL WITH VACCUM TRUCK AND DISPOSE OF PROPERLY. REPORTABLE QUANTITY: 1000 POUNDS. 40CFR-117.13
Neutralizing Agent:DILUTE CITRIC ACID.

===== Handling and Storage =====

Handling and Storage Precautions:THESE CELLS AND THE BATTE
RIES

CONSTRUCTED FROM THEM MAY BE HIGHLY CHARGED AND ARE CAPABLE OF HIGH ENERGY DISCHARGE. CARE SHOULD BE TAKEN TO HANDLE CELLS PROPERLY TO AVOID SHORTING OR MISUSE THAT WILL RESULT IN A RAPID, UNCONTROLLED ELECTRICAL, CHEMICAL, OR HEAT ENERGY RELEASE.

Other Precautions:DO NOT SHORT CIRCUIT- MAY CAUSE BURNS OR FIRE. DO NOT TRANSPORT ACTIVATED BATTERIES WITHOUT VENT CAP IN PLACE. WHEN REMOVING BATTERY FROM SERVICE, VISUALLY INSPECT FOR LEAKAGE PRIOR TO HANDLING. IF LE
AKAGE HAS OCCURRED FOLLOW SPILL MANAGEMENT
PROCEDURES. DO NOT ALLOW AN EXPOSED FLAME OR SPARK TO COM E NEAR THE CELLS.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:USE NIOSH APPROVED MIST RESPIRATOR DURING ACTIVATION AND ACTUAL USAGE TO MAINTAIN EXPOSURE LEVELS BELOW THE TWA.

Ventilation:PERFORM BATTERY CHARGING PROCEDURES IN A WELL VENTILATED AREA. BATTERY OPERATION AREAS MUST BE WELL VENTILATED TO REMOVE NORMAL GASES GEN

ERATED.

Protective Gloves:USE ANY WATER-INSOLUBLE, NON-PERMEABLE GLOVE, I.E.,
SYNTHETIC RUBBER

Eye Protection:USE SPLASH GOGGLES OR FACE SHIELD WHENEVER HANDLING A
BATTERY.

Other Protective Equipment:RUBBER BOOTS, RUBBER APRON OR RAINWEAR, OR
EQUIVALENT IF EXPOSURE TO ELECTROLYTE SOLUTION IS LIKELY. (FOR
HAND PROTECTION: DO NOT USE LEATHER OR WOOL)

Work Hygienic Practices:SKIN CONTACT: WASH WITH COLD WATER AND SOAP.

Supplemental Safety and Health

CADMIUM FUMES MAY BE RELEASED

WHEN BATTERIES ARE SUBJECTED TO HIGH

TEMPERATURES. IN CASE OF FIRE, DO NOT BREATH SMOKE AND FUMES!

===== Physical/Chemical Properties =====

HCC:B1

Vapor Pres:2MM HG AT 68F

Spec Gravity:1.170-1.250(ELECTTROLYTE)

Solubility in Water:SOLUBLE.

===== Stability and Reactivity Data =====

ALUMINUM, ZINC, TIN AND OTHER ACTIVE METALS, ACID, CHLORINATED AND
AROMATIC HYDDCARBONS, NITROCARBONS, HALOCARBONS. TRICHOLORETHYLENE
WILL REACT W

ITH ELECTROLYTE SOLUTION TO FORM DICHLOROLORACETYLENE
WHICH IS SPONTANEOUSLY

Stability Condition to Avoid:NOTE THAT NORMAL REACTIONS INSIDE BATTERY
LIBERATE FLAMMABLE HYDROGEN GAS. DO NOT SEAL BATTERY FROM
ATMOSPHERE.

Hazardous Decomposition Products:NICKEL OXIDE, CADMIUM, CADMIUM OXIDE,
AND POTASSIUM HYDROXIDE. CAUTION: NEVER ACTIVATE OR TOP OFF WITH
ACID.

===== Disposal Considerations =====

Waste Disposal Methods:THE STORAGE BATTERY IS A U
NIVERSAL WASTE UNDER

RCRA. IT MAY BE RETURNED TO SAFT FOR RECYCLING. BATTERY IS TCLP
TOXIC. BATTERY AND ELECTROLYTE SOLUTION ARE CORROSIVE. IF NOT
RECYCLED, MUST BE DISPO SED OF IN ACCORDANCE WITH ALL FEDERAL,
STATE, AND LOCAL REGULATIONS.

===== Other Information =====

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